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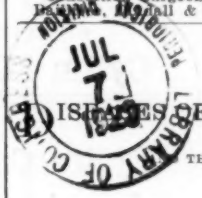

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CONTENTS

THE WHOLE OF THE LITERARY MATTER IN THE LANCET IS COPYRIGHT.

A LECTURE on an Oxidative Mechanism in the Living Cell. By Prof. F. GOWLAND HOPKINS, D.Sc., F.R.C.P., F.R.S. 1251

A LECTURE on Puerperal Insanity. By Sir ROBERT ARMSTRONG-JONES, M.D., D.Sc., F.R.C.P. 1297

ORIGINAL ARTICLES.

Mild Small-pox. By J. H. GARRETT, M.D., D.P.H. —(*Illustrated*) 1254

Ethyl Chloride as an Anæsthetic for Minor Operations in Children. By SAMUEL F. ROSE, M.R.C.S., L.D.S. 1258

A Slide Precipitation Test for Syphilis. By A. H. PRIESTLEY, M.B. 1260

A Further Study of a Precipitation Test for Syphilis. By Prof. C. Y. WANG, M.D., M.R.C.P., B.Sc., and R. A. BASTO, M.B., B.S. 1262

A Case of Chloroma. By HUGH T. ASHBY, M.D. M.R.C.P., and A. SELLERS, M.D.—(*Illustrated*) 1263

The Fatality of Puerperal Fever. By REGINALD DUDFIELD, O.B.E., M.B. 1264

MEDICAL SOCIETIES.

Royal Society of Medicine: Section of Laryngology: Summer Meeting 1265
Section of Ophthalmology 1266

Norwich Medico-Chirurgical Society: Insulin in Diabetes 1267

REVIEWS AND NOTICES OF BOOKS.

Practical Midwifery. By Gibbon FitzGibbon, M.D., F.R.C.P.I. 1268

Diseases of the Ear. By Sir William Milligan, M.D., and Wyatt Wingrave, M.D. 1269

Théorie et pratique des colloïdes en biologie et en médecine. By Prof. W. Kopaczewski 1269

Klinische Kolloidchemie. By Dr. Ernst Joël 1269

Environment and Resistance in Tuberculosis. By Prof. Allen K. Krause 1269

Lungentuberkulose. By Dr. O. Amrein 1269

Labyrinth and Equilibrium. By Prof. Samuel Steen Maxwell, M.S., Ph.D. 1270

The Physiology of Mind. By Prof. Francis X. Dercum, A.M., M.D., Ph.D. 1270

Traité de pathologie médicale et de thérapeutique appliquée. Vol. XXII. 1270

Translation of Selected Passages from De l'Auscultation Médiate (first edition). By Theophile H. Laennec. 1270

LEADING ARTICLES.

MIDWIFERY WITHOUT TEARS 1271

THE BASTARDY AND LEGITIMACY BILLS ... 1271

MILD SMALL-POX 1272

UNITY, PEACE, AND MEDICINE 1273

ANNOTATIONS.

Oxidation in the Living Cell 1273

China's Legitimate Drug Needs 1274

Selection of Operation for Glaucoma 1274

Rinderpest in India ... 1275

Multiple Peptic Ulcers... 1275

Attacks on Alienists by the Insane 1275

Spontaneous Pneumothorax in Pulmonary Tuberculosis 1276

Streptococci in Strangles. 1276

Manchester Radium Institute 1277

Successful Insulin Medication—(*Illustrated*) 1277

Progress in Combating Venereal Disease 1277

A Scheme for a County Pathologist 1278

Harveian Society: The Annual Dinner 1278

The Guardianship Society 1278

SPECIAL ARTICLES.

British Medical Association: Annual Meeting at Portsmouth.—Provisional Programme 1281

Berlin: Amendment of the Sick Club Act.—Problem of Decreased Birth-rate.—Organisation of the Universities 1282

Vienna: Correlations Between Syphilis of the Aorta and Syphilis of the Nervous System.—Statistical Data Concerning Cancer 1283

Czecho-Slovakia: The Report on Vaccination.—Social Insurance Scheme 1285

MODERN TECHNIQUE IN TREATMENT.

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XXV.—The Prophylactic Treatment of Puerperal Sepsis. By Lady FLORENCE E. BARRETT, C.B.E., M.D., M.S.—(*Illustrated*) 1279

PUBLIC HEALTH SERVICES.

Reports of Medical Officers of Health: Brighton.—Croydon.—Reading.—Ealing.—Hove.—Tunbridge Wells 1285

School Medical Service: Kent.—Eccles 1287

CORRESPONDENCE.

Opium in Septic Peritonitis (Dr. Wm. A. Costain) 1288

Toxic Symptoms Following the Alkaline Treatment of Peptic Ulcer (Dr. Arthur F. Hurst). 1288

Treatment of Hæmorrhoids (Mr. Arthur S. Morley) 1288

Delay in Giving Diphtheria Antitoxin (Dr. K. Simpson) 1289

In Memory of John Chiene (Major W. E. Home) .. 1289

Fibroma of the Ovary (Mr. H. A. Lediard) .. 1290

MEDICAL NEWS.

Royal College of Surgeons of England 1290

Royal College of Surgeons in Ireland 1279

Dalrymple House, Rickmansworth 1268

Society of Medical Officers of Health 1290

London Hospital Medical College 1290

Paddington Tuberculosis Dispensary 1290

National Council of Trained Nurses of Great Britain and Ireland ... 1290

Society for the Prevention of Venereal Disease ... 1290

Fellowship of Medicine and Post-Graduate Medical Association .. 1290

Epsom College: "France" Pensions 1290

Royal London Ophthalmic Hospital 1291

The late Dr. F. P. Ferran 1291

Cremation Society 1291

St. Thomas's Hospital: New Laboratory 1291

Livingstone College, Leytonstone 1291

The late Mr. A. McDonnell 1291

Cancer Charity, Middlesex Hospital 1291

rish Free State Army Medical Service 1291

Medical Golfing Society.. 1291

Poor-law Medical Officers' Association 1292

Caledonian Medical Society 1292

Small-pox in England and Wales 1292

Death of Mr. Clayton Fox 1292

Oxford Ophthalmological Congress 1292

Scottish Society of Anæsthetists 1292

Presentation to a Medical Man 1295

THE SERVICES.

Royal Naval Medical Service.—Royal Army Medical Corps 1292

PARLIAMENTARY INTELLIGENCE.

House of Commons: Advertisements on Medical Certificates.—Small-pox in Derbyshire.—Labelling of Dried Milks.—Ex-Officers and Medical Boards.—National Health Insurance Act.—Disinfectants and Venereal Disease.—Manufacture of Morphia and Heroin.—Nurses' Registration.—The Fire at the Highbury Pensioners' Hospital.—Pensions Nursing Service.—Shepherd's Bush Orthopædic Hospital.—Panel Treatment for Service Pensioners.—India and Opium Control.—Lead Poisoning among Painters and Plumbers.—Terms and Duties of Panel Doctors.—Cannock Chase Pensions Hospital.—Children in Workhouses.—Small-pox in Gloucestershire.—Notification of Tuberculosis in Cattle.—Small-pox and Official Reports 1293

NOTES, COMMENTS, AND ABSTRACTS.

Health Conditions in Trinidad 1298

St. Chad's Hospital for Paying Patients, Birmingham 1298

An Improved Firelighter. 1298

Medical Diary 1295

Appointments 1296

Vacancies 1296

Births, Marriages, Deaths 1296

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A Lecture

ON AN

OXIDATIVE MECHANISM IN THE LIVING CELL.

Delivered at St. Mary's Hospital, London, on June 7th,

BY F. GOWLAND HOPKINS, D.Sc., F.R.C.P. LOND., F.R.S.,

PROFESSOR OF BIOCHEMISTRY IN THE UNIVERSITY OF CAMBRIDGE.

I FEAR that to many, and especially to those whose habits of thought are not chemical, the facts to be put before you must seem technical and remote from medical interests. While this may be the case at the present time, the facts in question bear upon so fundamental an aspect of living processes that sooner or later they must become the concern of the pathologist as well as of the physiologist.

It is never, I think, out of place to urge that the living cell should be thought of as a dynamic, and not a static, system. There is some tendency just now, even on the part of those who have transferred their allegiance from histological studies to studies of colloidal systems, to give descriptions of the cell which are nearly as static as purely anatomical descriptions. The progress of histology is as much to be desired as ever and every essential property of the colloidal state is of urgent interest to the biologist. Let us not forget, however, that the living cell is ever the seat of chemical *action*. Among the most fundamental of the dynamic chemical events related to life are the oxidations which yield energy to the cell. From the chemical standpoint these oxidations have always had and must continue to have especial interest, because while they ultimately depend upon the influence of molecular oxygen, they are concerned with material which under ordinary conditions do not interact with molecular oxygen. This circumstance constitutes a familiar and fundamental problem of metabolism.

THE IMPORTANCE OF WATER IN BIOLOGICAL OXIDATIONS.

Biological oxidations are always catalysed oxidations. Though our knowledge of the catalysts concerned may be still meagre, it has grown appreciably during recent years. What I am to say has reference to such progress as has been made. Earlier attempts to solve the fundamental problem stated above usually relied upon the conception that molecular oxygen is in some way activated within the cell. One such conception still to the front, and probably justified, is that of the so-called oxidase systems. The essential idea underlying the theory of oxidases is that there exist in the cell in small but effective concentration special substances capable of taking up molecular oxygen in the form of a peroxide. The oxygen thus activated can then be transferred to other substances not themselves directly oxidisable. The description of oxidases is familiar and their functions in the cell are probably limited. I shall, therefore, refer to them only indirectly and briefly at a later point in the discussion.

A very notable advance towards an understanding of biological oxidations was made when it became clear that water plays an important part in the processes involved. The biological importance of the peculiar physical and chemical properties of water come, indeed, to the front from whatever standpoint we consider the dynamics of the living cell. It is well always to remember that living stuff consists to the extent of three-fourths of water. To the teaching of Moritz Traube we owe the first clear suggestion that many oxidations due apparently to the direct influence of atmospheric oxygen are in reality only indirectly influenced by such free oxygen. The direct oxidising agent in these cases is the oxygen of water. Traube's views were perhaps not quite correctly formulated and, superficially considered, they seemed to contradict the principles of thermodynamics; otherwise their influence would have been earlier and more generally felt. Their later development we owe in large measure to Bach.

To be clear on this matter, we must first realise the fundamental fact that many substances when in aqueous solution, or in contact with water, may undergo oxidation in the complete absence both of air and of molecular oxygen in solution. Such oxidations occur anaerobically. The only possible source of oxygen is the water present. If we inquire more closely into the conditions which make these anaerobic oxidations possible, we shall find that in addition to the oxidisable substance and the water, an agent capable of combining with hydrogen must also be present. The oxygen of water may be induced to change partners if and when, but only if and when, its original associate, the hydrogen, is also provided with a new partner. In other words, in aqueous solutions oxidations may occur in the complete absence of free oxygen, but only in association with reductions occurring simultaneously. Bach speaks of the combined processes in question as "hydrolytic oxidation-reduction processes." When uncatalysed, such processes usually proceed so slowly as to elude observation; but they are peculiarly susceptible to catalysis. The circumstance of significance for us is that the living cell is rich in enzymes capable of catalysing just this type of change with remarkable efficiency.

It will be convenient during further discussion if, in accordance with present usage, I speak of the substance which, in the kind of chemical system we are considering, becomes oxidised by water as the "oxygen acceptor" and of the substance which is simultaneously reduced by hydrogen as the "hydrogen acceptor."

MOLECULAR OXYGEN AS HYDROGEN ACCEPTOR.

It should be called to mind at this point that life is possible without oxygen. In the metabolism of the many parasites which live anaerobically, the maintenance of a supply of hydrogen acceptors is of the utmost importance. It is furthermore quite likely that in more normal forms of metabolism processes of the kind we are considering occur at intermediate stages, and perhaps especially when for one reason or another the contemporary oxygen supply becomes deficient. The point of greatest importance for us to remember, however, is the following: In practically every case of oxidation due to the oxygen of water the hydrogen acceptor, instead of being some product of metabolism, may—whenever it is available—be molecular oxygen itself. Although the fact seems paradoxical, we may have chemical systems, of which the living cell is a conspicuous example, in which atmospheric oxygen oxidises the hydrogen of water, while the oxygen of the latter is engaged in oxidising a dissolved substance. To make the possibility of this appear as logical to the mind many points have to be taken into consideration: first, the nature of the molecular species present in a mass of water (they are certainly not all simple H_2O molecules!); next the nature of the catalytic system involved, and perhaps also the formation of temporary intermediate associations between the water molecules and those of the substance oxidised.

To demonstrate experimentally the occurrence of the chemical events in question, when they proceed anaerobically, a simple and familiar technique is commonly employed. Into a system comprising a preparation from an animal tissue and a substance of which the oxidation is to be studied such an indicator as methylene-blue is introduced. This being a reducible substance acts primarily as an efficient, if artificial, hydrogen acceptor. It also acts, because of its loss of colour on reduction, as a convenient indicator of the progress of events. If, for instance, we make a tissue preparation in such a way that it does not by itself reduce methylene-blue, and this may be easily done by washing the original tissue with water, the addition of this or that substance may restore the reducing power. If it does so we may be sure that

the substance in question undergoes an oxidation which is simultaneous with the reduction of the methylene-blue. I might mention a large number of instances in illustration of the fact that substances are thus anaerobically oxidised by tissue catalysts in the presence of efficient hydrogen acceptors, such as are represented by methylene-blue.

I will content myself with one. Morgan, Stewart, and I have shown that the familiar biological oxidation whereby the purin bases xanthin and hypoxanthin are converted into uric acid can, in the presence of methylene-blue, proceed anaerobically. The enzyme concerned is present in many tissues and, oddly enough, like the Schardinger enzyme which oxidises aldehydes, it is passed by the mammary gland and occurs in milk. In the latter it is very easy to demonstrate its properties and to make quantitative studies of its activity. If air be excluded, milk, of course, does not by itself oxidise the bases; but even under rigidly anaerobic conditions, if methylene-blue as well as xanthin or hypoxanthin be added to the milk, oxidation proceeds apace and uric acid can be afterwards separated from the fluid. The significant fact, however, as I would once more emphasise, is that atmospheric oxygen can take the place of methylene-blue as the hydrogen acceptor. If milk containing either of the purin bases be well aerated uric acid is rapidly formed. It is interesting to remember that the change involved is one most difficult to induce by the use of laboratory reagents which bring about direct oxidations. Since under the influence of a biological catalyst it proceeds rapidly *either* anaerobically or aerobically, and since there is good reason to believe that the same catalyst is concerned in each case, we can hardly escape from the conclusion that in the normal biological production of uric acid the oxygen brought to the tissues does not act directly but indirectly through the agency of water.

When we come to inquire as to the precise chemical mechanism involved in the interesting partition of the constituents of water between two acceptors we meet some gaps in knowledge. Oddly enough, we know less about the nature of the molecules present at any moment in a mass of water under ordinary conditions than about those in many other fluids. We do know, however, as I have already said, that they are not simple molecules represented by the familiar H_2O. Modifications occur which may involve great chemical activity, and with these the oxidising catalyst may have special relations.

A simple view, however, is to suppose that the oxygen acceptor takes up hydroxyl groups while the hydrogen acceptor simultaneously removes hydrogen atoms. If A represents the former acceptor and A′ the latter, we get:—

$$A + \begin{matrix}OHH\\OHH\end{matrix} + A' \longrightarrow A\begin{matrix}OH\\OH\end{matrix} + A'H_2$$

$$A\begin{matrix}OH\\OH\end{matrix} \longrightarrow AO + H_2O$$

$$AO + A'H_2$$

We finish, then, with AO and $A'H_2$, representing an oxidation and a reduction simultaneously accomplished. If A′ be oxygen we shall get AO and H_2O, the oxidation of A being the essential and only observed result. Whether we are to consider such events as involving the ions of water or the intermediary formation of additive molecular compounds is not yet clear.

HYDROGEN TRANSPORT.

You must here realise, however, that a view has been taken which, at first sight, seems to make the water molecule of less general significance in the processes we are considering. This view provides a standpoint from which it is specially convenient to consider certain facts which are to form the chief theme of my lecture. All the earlier attempts to explain biological oxidation looked, as I have already said, to the activation of molecular oxygen, by some agency or other, as the essential happening. H. Wieland, however, has advanced the view that we must look rather to the activation of hydrogen. The activity of a catalyst promoting such oxidations is according to Wieland spent primarily in conferring mobility upon hydrogen atoms contained in the molecule of the substance to be oxidised, so that these are readily transferred to an acceptor which may be atmospheric oxygen. Often, of course, we speak of an oxidation when a molecule suffers no more than a removal of hydrogen. Certain cases of oxidation by the tissues come into this category and allow of simple application of Wieland's view. Many living tissues, or preparations made from them, readily oxidise, for instance, succinic acid to fumaric acid.

$$COOH.CH_2.CH_2COOH \longrightarrow COOH.CH = CH.COOH \longrightarrow H_2 \longrightarrow$$

This may occur anaerobically when suitable hydrogen acceptors are present in the system, or aerobically when the activated hydrogen becomes oxidised to water. On the other hand, in other and perhaps more significant cases oxygen is itself added to the molecule undergoing oxidation. In Wieland's view this is because hydrogen is activated after water has become associated with the molecule. The oxidation of aldehydes to the corresponding acids is a process powerfully catalysed by agents in the tissues. There is good reason to suppose that the aldehyde is oxidised when in the form of a hydrate.

$$R.COH + H_2O \longrightarrow R.CH\begin{matrix}OH\\OH\end{matrix}$$

$$R.CH\begin{matrix}OH\\OH\end{matrix} \longrightarrow R.COOH \longrightarrow H_2 \longrightarrow$$

Here again the process may occur with or without free oxygen. It occurs always if a suitable hydrogen acceptor be present. Even in Wieland's view it should be observed water is the source of the oxygen actually and directly concerned in the oxidation. We may now, however, conveniently speak of the oxygen acceptor alternatively as a "hydrogen donator" (Thunberg), and think of the essential process as one of hydrogen transport.

This conception of hydrogen transport makes easy a discussion of the facts which I am now to put before you. I would commend them to your notice mainly because they relate to an oxidative mechanism present in the living cell which from the chemical standpoint is likely to prove easier of understanding than the still somewhat elusive phenomena of enzyme action.

ACTION OF AN ORGANIC SULPHUR COMPOUND IN LIVING CELLS.

Many of the tissue catalysts responsible for particular oxidations are found to be highly specific and to show the instability common to enzymes. It would seem, however, that in addition to the enzymic systems the cell possesses at least one chemical mechanism, with more general functions, comprising factors which are thermostable and relatively easy to study. So far back as 1908 the suggestion was made by A. Heffter that some organic sulphur compound in the living cell might prove to be responsible for part of the reducing power displayed by animal tissues, which might also, perhaps, act indirectly as an oxygen carrier. It is well known that the *sulphydryl* or *thiol* group, –SH, when in certain combinations is spontaneously oxidisable ("autoxidisable"), the substance containing it being converted on exposure to the air into a disulphide.

$$2\ R-SH + O \longrightarrow R-S-S-R + H_2O$$

On the other hand, the disulphide form is easily reducible, so the two forms constitute a reversible system.

Two possibilities seemed to present themselves if such a sulphur compound were in the cell. As in most autoxidations the conversion of the thiol group is likely to be associated with peroxide formation.

$$\begin{matrix}-SH\\-SH\end{matrix} \quad \begin{matrix}-O\\+-O\end{matrix} \longrightarrow \begin{matrix}-S\\-S\end{matrix} \quad \begin{matrix}H-O\\\pm\\H-O\end{matrix}$$

So that its spontaneous oxidation might provide active oxygen capable of being transferred to sub-

stances not of themselves autoxidisable. On the other hand, the disulphide form whenever produced might well act as an efficient hydrogen acceptor in the sense I have been discussing. As a matter of fact, most, if not all, living cells do contain such a sulphur compound, and it can be shown to play a significant part in oxidations which occur in the cell.

INFLUENCE OF GLUTATHIONE.

In 1921 I was able to isolate from the yeast cell and from various animal tissues a substance which I have called *glutathione*. It has proved itself to be a dipeptide containing the amino-acids, cystein, and glutamic acid. It is the cystein moiety, of course, which carries the sulphydryl group, and it is to this that the significant properties of the substance are due. Free cystein, however, does not and cannot accumulate in the cell, and glutathione subserves the functions I am about to discuss better than free cystein could do, because both its oxidised and reduced forms are freely soluble. Cystine, the oxidised form of cystein, is of course exceedingly insoluble.

It is necessary that I should ask you to consider rather closely some of the properties of glutathione in order that you may appreciate its functions in the cell. We need not trouble further about its constitution, save in respect of its sulphur groupings. We may represent the two forms in which it exists by means of simple diagrammatic formula thus:

$$G - S - S - G \rightleftharpoons \begin{matrix} G - SH \\ G - SH \end{matrix}$$

In the tissues when freshly removed from the body the substance is found to be mainly present in its reduced form. This form is autoxidisable, and the normal oxygen supply from the blood must condition its continuous oxidation. It must therefore be also continuously reduced. It is indeed easy to show by a colour reaction that there are factors in the tissue which are capable of reducing the substance. If a solution of the oxidised form at the hydrogen-ion concentration proper to the tissues be placed in contact with fresh tissue it proves to be rapidly reduced until a definite equilibrium between the oxidised and reduced forms is established. It is essential that these facts should be clear at the outset. In the tissues the –SH is autoxidisable; the –S–S– group becomes reduced. A little consideration will show that the presence of glutathione must therefore involve a continuous transport of hydrogen within the cell. Other facts, proved experimentally, will make the nature of its influence clearer. If fresh tissue—muscle, for instance—be thoroughly washed with cold water, the whole of the glutathione will—inter alia—be removed. The washed tissue will now be found to have lost its original capacity for reducing methylene-blue under anaerobic conditions, and also its capacity for taking up oxygen under aerobic conditions. It no longer "respires." Now the addition of glutathione in relatively very minute amount restores to a considerable extent the capacity of the washed tissue to reduce and to respire. This is not because the added glutathione acts as combustible material, but because its sulphur groupings act as catalysts.

The situation is therefore this: In the washed tissue are substances quite insusceptible of oxidation under the direct influence of molecular oxygen, which is of course what the cell receives from the blood. These same substances nevertheless freely undergo oxidation when in contact with the molecule of glutathione. How can we picture the mode of its action in this case? We think first of all of a simple transport of hydrogen in accordance with Wieland's conceptions, and the justification for doing so is that when the system reduces methylene-blue there must be such transport, since it is the addition of hydrogen and nothing else which converts the blue compound into its leuco form. We may picture the difference between the anaerobic and aerobic events as being merely that in the latter oxygen becomes the hydrogen acceptor. The process may be represented in the following diagrammatic scheme, in which X represents a constituent of the tissues and A a hydrogen acceptor, be it such a substance as methylene-blue, or, in another case, oxygen.

$$(a)\ X\begin{matrix}H\\H\end{matrix} + G - S - S - G \rightarrow 2\,GSH + X$$

$$(b)\ 2\,GSH + A \rightarrow G - S - S - G + A\begin{matrix}H\\H\end{matrix}$$

The facts justify the following conceptions. The hydrogen is not directly transportable from the tissue to the acceptor, or is only so transported with a velocity too slow for observation. It is, however, readily transported to the –S–S– group of glutathione, and from the –SH group thus formed it is again readily transported to the final acceptor. The oxidised form of glutathione may therefore be termed an intermediate hydrogen acceptor, and the presence of the substance in effect catalyses hydrogen transport. It should be noted that while, on these lines, a tissue constituent would only be oxidised in the sense of losing hydrogen, the essential mechanism remains the same if, as in the more general case referred to earlier, the substance in question first forms a molecular compound with water. It is then the hydrogen of combined water which is transported, while the substance is left combined with oxygen.

The question now arises: Is any *enzyme* remaining in the washed tissue also concerned in this remarkable transport of hydrogen? Is glutathione to be considered as belonging to the category of substances commonly classed as co-enzymes? It would seem not. If the washed tissue be heated to 100° C. or even submitted to prolonged boiling, its behaviour in the presence of glutathione is only altered in the sense that (owing, I think, to the increased permeability) the velocity of its oxygen uptake when it is aerated is increased. The total amount of oxygen taken up, some 2 litres per kilo of tissue, remains substantially the same. Although therefore many substances, of which some were earlier mentioned, require for their oxidation the aid of highly specific tissue enzymes, there are certainly materials in a tissue, far from unimportant quantitatively, which, *with glutathione*, form a thermostable system capable of taking up ordinary molecular oxygen, or, if you will, of respiring. I am to-day, unfortunately, quite unable to tell you what these materials as a whole may be. The phenomena have been under study for a short time only, and this particular aspect of the study has proved difficult. I can, however, mention substances of which the oxidation is actively catalysed by the substance glutathione. These are the fats which contain unsaturated fatty acids. In dealing with the oxidation of these fats I must, however, complicate somewhat the relatively simple account so far given of the behaviour and functions of glutathione. I trust I can make matters clear here, because I think the complications referred to really add interest to my story.[1]

If what I will now call a thermostable tissue-residue be suspended in, say, Ringer's solution containing a suitable concentration of hydrogen ions, and if the suspension be then shaken in a Barcroft's differential manometer, it will be found that little or no oxygen is taken up. If now oxidised glutathione be added to the system, uptake of oxygen immediately begins and proceeds to the limit referred to above. It ceases, of course, when all the special materials remaining in the tissue preparation are oxidised. If, however, to the above system an emulsion of an unsaturated fat (linseed oil, cod-liver oil, &c.) be added, the uptake of oxygen is greatly increased. With certain qualifications it may be said that the increase is proportionate to the amount of fat added. Now the fat emulsion by itself takes

[1] The facts concerning the oxidation of fats have not yet been published. Prof. Otto Meyerhof, working not with a natural cell constituent but with thioglycollic acid, has found that the thiol group catalyses the oxidation of unsaturated fatty acids.

up oxygen with a velocity which relatively to its behaviour in the above system is extremely small. The tissue alone has no effect upon this velocity. The sulphur compound is essential to the catalysis. There is this complication in the facts, however. The oxidation of the fat is catalysed by glutathione alone, that is, when no tissue preparation is present. Only—and this point is very important—the reduced (–SH) form of the glutathione must be present from the first. The reason for this necessity is not far to seek. The fat by itself, unlike the tissue residue, has no power to reduce the disulphide group (–S–S–) of the oxidised form. There can in this case, therefore, be no question of the simple hydrogen transport so fully discussed above.

What, then, is the chemical mechanism at work when the unsaturated fats are oxidised under the influence of the sulphydryl (SH) group? It is highly probable that during the autoxidation of the sulphur group an unstable peroxide is first formed, and the oxygen so taken up is, in whole or in part, transferred to the fat. If this be so, those of you who are familiar with accepted views as to the constitution of "oxidase" systems (with which I must not stop to deal) will recognise that glutathione comes near to being the factor assumed to be present in such systems—the factor, namely, which forms with molecular oxygen an organic peroxide. In the case at least of unsaturated fats glutathione acts, however, without the assistance of a peroxidase or its equivalent.

In any case, this constituent of living cells seems capable of playing two parts as a catalyst of oxidations. It may facilitate both hydrogen transport and oxygen transport. To say the truth, this might well be expected from the nature of its active groups and from the reversible nature of the essential charges which they undergo.

DISAPPEARANCE OF THE EFFICIENT CATALYST.

I must not leave untouched one interesting aspect of the facts just mentioned. In the simple system formed by unsaturated fats and reduced glutathione without tissue, oxidation of the former comes always to an end before it is complete. The reason for this is that *pari passu* with the oxidation of the fat the –SH group itself undergoes oxidation. As the –S–S– group which results is not reduced by the fat, the efficient catalyst finally disappears from the system. Note how different is the case when the tissue system, capable of reducing the disulphide group, is also present. Then the –SH group as oxidised is continuously reconstituted and oxidation of the fat continues as long as the reduction continues. We see, then, that the oxidation of a substance involving one type of change (let us say hydrogen transport) may control the oxidation of another substance involving another type of change (oxygen transport). We may recognise here an indication of that correlation and organisation of chemical events which is so characteristic of living tissues. The facts adumbrate, or perhaps even indicate lines on which we can come to understand how in the body the oxidation of fats may depend upon the oxidation of carbohydrates.

Perhaps the matters I have put before you with imperfect exposition and without illustrative demonstrations may prove obscure on first hearing. I shall be content if I leave one impression on your mind. You have had before you a case in which catalysis in the cell is determined by the properties of a relatively simple molecule. The mechanism of this catalysis, if not yet wholly understood, is one which after further study on quite ordinary chemical lines should become clear. Is it not likely in the case of other and more elusive catalysts, such as enzymes, that some simple aspect of molecular structure—something analogous with the active sulphur groups of glutathione—is responsible for their activity? The association with colloidal systems, which is responsible for the apparent instability of such catalysts, however important, may be, in respect of the actual chemical mechanism involved, a secondary circumstance.

MILD SMALL-POX.

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SOME parts of England have been subject to a new experience within the last months in connexion with small-pox, the disease being of such a character as to require a special title such as that which heads this article. For it is my intention to give to "mild small-pox" a signification to indicate something distinctive and different from "small-pox" as commonly conceived. It is a small-pox that very rarely results fatally, whose symptoms are so feeble as to be commonly overlooked, or are at most indicative of nothing worse than a cold, a bilious attack, or other slight and temporary ailment. The body and spirits are affected so little as to negative the necessity of staying in bed, or even within the house, but for the appearance of a peculiar and persistent eruption on parts of the skin, which sooner or later leads to the discovery of the case to a doctor, who may easily fail at first to recognise it as a case of small-pox.

Recent Recrudescence of Small-pox.

Small-pox of any type had until recently become of such rare occurrence in Britain that a very great percentage of our younger medical practitioners have never had the opportunity of seeing a case. The older practitioners who, like the writer, may have prided themselves upon a greater experience, probably saw their small-pox a long time ago, very likely as long as 20 years, which is too long a time to be serviceable when the disease crops up in a new and unexpected guise. The result of such lapse of time is to give rise to a conservative incredulity in the minds of these older men, and a bias in favour of chicken-pox, begot by numerous bad cases of chicken-pox having been encountered as a commonly recurring experience in their practices, some of which were sent into quarantine at the isolation hospital unnecessarily, as the sequel seemed to show. In connexion with the first cases of mild small-pox met with, the mind is also affected by the argument that there has been no small-pox in the locality. How, therefore, can this be small-pox? The late experience to which I began by referring, however, appears to require an alarm note to be sounded to awaken practitioners to the very likely occurrence of this mild type of small-pox in any part of Britain. In South Yorkshire and Derbyshire the cases that have been recognised total some hundreds, and the disease is spreading and is bound to spread further. It is now occurring in growing numbers of cases in the county of Gloucester, the first case or cases having perhaps been brought down from further north, and the centres of its appearance include some of the most remote agricultural villages as well as the more prominent towns of this county. The connexions of the patients with railways, motor char-a-bancs and other vehicular traffic, and with various public institutions, point clearly to the likelihood of the spread of the disease to all parts, so that every doctor should be expectant of meeting with a case.

Medical officers of health when they hear of cases, or cases that are suspicious of being small-pox, are under obligation to immediately report the matter to the Ministry of Health. This will very likely bring in one of the medical officers of the Ministry. It was Dr. W. Vernon Shaw who came to Cheltenham, and in acknowledging his great assistance to me at the outset, I call the attention of every medical officer to the advantage of being able to consult with a confrère who has been occupying himself in visiting the parts of the country subject to outbreaks of mild small-pox, and has seen numbers of cases of the disease, and noted various circumstances attending the cases, all of which renders him expert beyond a common degree in the diagnosis of such cases and in their discovery. It may be one's fate to become as expert as he, but this will not be at first, and he will be able to

shorten the road to such desirable efficiency. The lessons I thus derived were of great advantage to myself and the town I serve, and I am impressed with the great public use of this department of the Ministry of Health.

An Explanation Sought for the Mildness.

It appears that a considerable experience of mild small-pox has been had in the United States, where its usually benign course, as compared with the expected malignancy of small-pox as formerly known, has led to propositions for a new name for this type of the disease. I believe that experience will negative the introduction of any new word as title, since the evidence of its being all one disease is too potent to admit of a separation; in fact, it would be a fatal policy to consider the very mildest case anything other than small-pox. In the course of experience of any considerable outbreak, evidence will be obtained of the tendency of signs and symptoms to vary within wide limits, and, occasionally, for a case to occur of such severity as to present a very ugly appearance. Even in the same family, presumably according to differences of individual susceptibility, the cases occurring at the same time, and derived from the same source of infection, vary much, the diagnosis of the mildest case being assisted and confirmed by the existence of the one or two cases of much more marked character. A considerable proportion of the cases are, however, of the utmost triviality apart from their power of infecting others to produce further cases, some amongst which will always be of a more decided nature. In following up cases that have occurred through two or three generations of infection, a suggestion arises that the mildness of the case tends to decrease as the number of successive cultures in the human body increases. I am not sure enough of this to insist upon it, and the acceptance of such a theory appears to require some other mode of origin than the invariable derivation of infection from a previous case. But in connexion with an outbreak amongst and in near relationship with the children of a school, the triviality of the originating cases was extreme, whilst the evidence that they were cases of mild small-pox, and that they had infected others with whom they came in most close contact, some to develop marked and unmistakable signs, was undeniable. That cases are derived from previous cases is of easy affirmation, but the denial of any other mode of origin is not authorised by any positive knowledge we possess. This at least can be remembered in reviewing the possible cause of such very mild cases, and sufficient evidence may at length be obtained to establish what is indeed the fact as to their origin.

The popular mind is prepossessed with the idea that small-pox must invariably be marked by a severe illness and a rash of disgusting appearance that leaves the face scarred, if recovery should result. It is not surprising, therefore, that parents and others will not readily believe that they or their children are suffering from mild small-pox when signs and symptoms are as insignificant as they may be. The fact is that small-pox, like other diseases, may occur in any degree of severity, from one diagnostic spot occurring in a watched contact with no perceptible illness at all, up to the worst case that results in speedy death. In past epidemics of small-pox, such as that which happened at Gloucester in 1896, where the recognised cases numbered thousands and the deaths hundreds, it is highly probable, judging from our present experience, that very many cases occurred of the nature of mild small-pox, which were never recognised, but which assisted to extend the direful pest.

Small-pox Modified by Vaccination.

I have been interested, in common with many others no doubt, with the theory of Dr. C. K. Millard, medical officer of health for Leicester, which inveighs against the virtue of a general vaccination as protective against small-pox. Though a thorough believer in the preventive influence of vaccination, he has held that the value of vaccination is much lessened by reason of being the cause of a number of modified cases of small-pox, occurring in those persons who were vaccinated so long previously as to have lost the total preventive power of vaccination, but who have retained a partial protection which may result in a modified case of small-pox which is likely to be overlooked, and, being infectious, give rise to more cases than if the disease had occurred to a more downright degree in an unvaccinated person. We have now throughout the country a population largely unvaccinated. In my recent experience of mild small-pox, all the juvenile cases were in unvaccinated children or adolescents, whilst the adults who had been vaccinated in infancy, 30 to 60 years previously, got the more definite attacks, which, though still mild, could not be mistaken. In connexion with Dr. Millard's proposition I wish to make it clear that in mild small-pox we have degrees of modification more pronounced among the unvaccinated than anything of the sort that has ever been attributed to previous vaccination, however long ago done. There must also always be a doubt as to whether the modified case occurring in a vaccinated person is a naturally modified case of mild small-pox, or that the modification is due to vaccination. The former appears most likely, and the contemplation of an outbreak of mild small-pox serves, in my mind, to discount almost entirely what Dr. Millard has advanced.

There is evidence here, and everywhere, that recent vaccination has a very powerful and pronounced protective influence against mild small-pox, and what is also very interesting is that mild small-pox exercises as strong a protective influence against after-vaccination. This is easily capable of practical demonstration and has been demonstrated at Cheltenham in a most positive way. Even the more trivial cases of mild small-pox have been promptly rendered exempt from the effect of vaccination, whilst all the brothers and sisters of their families have shown a usual positive result when vaccinated at about the same time, the whole having been previously unvaccinated. Two or three weeks from the first occurrence of the smallest number of eruptive spots of mild small-pox appears to be sufficient time to insure this preventive result against vaccination being obtained. Vaccination and mild small-pox are equally preventive of each other. Previous recent vaccination (say up to seven years) is consequently an assistance in determining a doubtful case as not being mild small-pox. Failure of vaccination after an attack of mild small-pox is confirmatory of the diagnosis.

Contacts and School Closure.

The infectiousness of mild small-pox varies much in different cases. In this it resembles other infectious diseases. We know well that in scarlet fever and diphtheria it is not that all cases are very infectious, but only one here and there. This appears to be the case in a marked degree with mild small-pox, and the severity of signs and symptoms, or the bad appearance of the case, does not of necessity indicate a corresponding degree of infectiousness. Several of the worst-looking cases, though much exposed, have resulted in no further cases that could be traced to them. On the contrary, a case that was of a trivial description, with not more than ten eruptive spots and no recognised constitutional disturbance at all, gave rise at the end of the incubation period after a short exposure to three other known cases. There is distinct evidence that the time when the rash is first appearing is the most infectious stage of the disease. There is evidence also that the infection is more effective the closer and more persistent the contact. At the school the cases tend to be limited to the class. The child infected at school has the greatest effect in producing further cases in its home. Four children of different families who had very feeble attacks of mild small-pox, which did not prevent them going to school whilst infectious, and which in fact resulted in a few other cases in the school, produced 15 cases in their own homes amongst the unvaccinated members. They

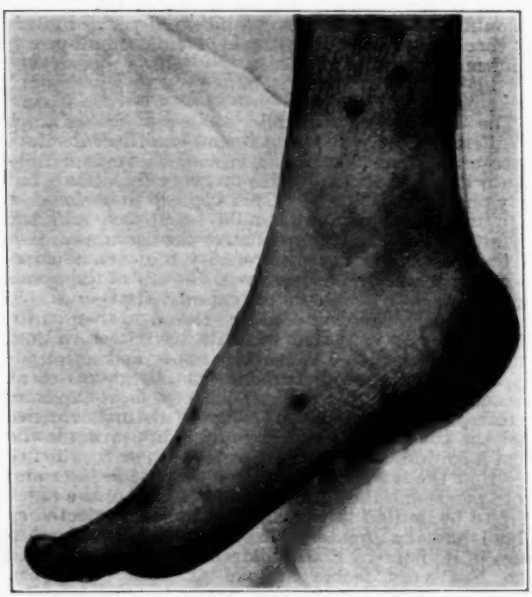
FIG. 1.
Typical Chicken-pox Notified as Small-pox.

The eruption is mainly on the trunk.

FIG. 2.
Mild Small-pox Notified as Chicken-pox.

The eruption is on the face and hands.

FIG. 3.
Typical Mild Small-pox.



The foot in second week of eruption.

FIG. 4.
Mild Small-pox Notified as Chicken-pox.

At first glance this case deceived the author, the distribution of eruption being mainly on the trunk (the back is shown). Pustules on the feet emphatically corrected the diagnosis.

would be at home of course in any case during the most infectious period, and in very close and continuous contact with the brothers, sisters, and parents. Observation of these and other cases has resulted in the suggestion to my mind of the conveyance of the disease by a parasitic carrier, and I mention the itch mite as a possible medium. Such a beginning of mild small-pox in a school, where the bulk of the children are unvaccinated, the first cases being of this mildest of mild types, is alarming when first contemplated as being the likely mode of origin of an epidemic, whose cases might be much more serious as they advanced than as at first initiated.

The watching of contacts in a large school, including daily visits to all absentees to ascertain the nature of the ailment that may be keeping them from school, is an arduous business which would become difficult or impossible to perform when many schools were involved. The policy of closing the schools, under such circumstances, requires the most careful consideration, and must generally be negatived, as a more effective control can be exercised whilst the school is running. Very urgent circumstances may sometimes indicate the desirability of closing a small school. But where hundreds of children are involved there is no wisdom in closing the school because a few cases of mild small-pox have occurred in it, for by closing you only scatter your scholars and throw your control to the winds. In the instance I quoted of four scholars attending one school, in whom signs of mild small-pox were discovered after they had had time to infect their families and some few others of their schoolmates, the further spread was controlled by the following cases in the school being picked up at the moment of first definite signs of having contracted the disease, the last being discovered at the end of the third incubation period counting from the first known. But the anxiety and labour involved in connexion with that one school showed clearly how easily the watching-of-contacts method for exterminating mild small-pox might, and must, fail if the whole of the schools of a town became affected. The examination of the children calls for the best medical knowledge and judgment and cannot be left to untrained assistants.

Difficulties of Diagnosis.

The difficulties of certain diagnosis of commencing cases of mild small-pox are most considerable. It is only when occupied in searching amongst absentees from school for possible cases of the disease sought for that you become aware of the infinitude of small complaints to which school-children are subject, many of them accompanied by a rash or eruption which may closely simulate the beginnings of mild small-pox without being it (Fig. 1). Here is where recent vaccination is of such great assistance to immediate diagnosis, and relief of doubt. An undoubted prior attack of chicken-pox in a child is also assisting to exclude the likelihood of that disease, though mere hearsay, without evidence by pock marks, of this disease having been suffered is not to be relied upon when it is simply the parent who thinks the child has had chicken-pox. Right recognition of the complaint, as well as clear memory of which child of the family had it, and whether it was not really measles, or something else from which the particular child had before suffered, are points upon which confusion in the mind of a mother with a large family is very likely to occur. But recent vaccination is the all-important thing eagerly inquired about as the sheet anchor of protection, and the settling point in diagnosis, which never seems to fail. Perhaps the conditions of the skin which give rise to most doubt as between them and the beginnings of mild small-pox are itch spots, flea-bites, and other insect bites common in the summer season, acne, chronic and intermittent eruptions of boil-like character, urticaria, local erythemas and other rose rashes, impetigo, temporary eruptions of dietetic origin, and simple eruptions without name, ordinarily passing for nothing of sufficient importance to notice, also chicken-pox (Figs. 2 and 4). Formerly, we have had held up to our view the difficulty and importance of determining between small-pox and chicken-pox, but after an experience which has led to frequent close comparison between these two diseases running concurrently, a

Two Cases of Mild Small-pox in the Third Week of Eruption.

FIG. 5.

FIG. 6.

condition of expertness is arrived at which enables a diagnosis to be made with considerable certainty from the second day of the rash, if not from the first, though observation through a longer period of time makes the matter more certain, and this even though the case be one of the more trivial instances of mild small-pox. Of course, there are many cases in which one glance suffices to settle the matter either way. Nevertheless, one-glance diagnoses are bad practice and for security's sake every case should be carefully examined from head to foot.

Differentiation from Chicken-pox.

As between chicken-pox and mild small-pox the distribution of the rash, the appearance of the rash, and the length of the continuance of the spots of eruption without much change are visible factors which decide the nature of the case. Thus the rash of chicken-pox will be mainly observable on the belly, back, and sides, with widely scattered spots upon head, particularly the forehead, and limbs. That of mild small-pox will be chiefly on the limbs, very likely extending on to the wrists, hands, ankles, and feet, even perhaps (and this is most useful evidence) affecting the soles and palms; the rash may be scattered over the body and face as well, especially about the mouth, but is not very likely to extend much up the sides towards the axillæ. In chicken-pox some of the spots will appear as simple vesicles, full of clear fluid, and perhaps of rather large size. These vesicles burst quickly and from the second day begin to dry up into a superficial dark-coloured scale. The eruption, in fact, changes in appearance rapidly. In mild small-pox, the spots at first are small, may appear in red pimples, or as round topped shotty elevations which, if they progress, soon become pustular (Figs. 3, 5, and 6). It is rare to see a papule pass into a clear vesicle and the vesicle into a pustule, as in old classic descriptions. The eruption is pearl-like, as if containing thick non-transparent fluid. Either the papular or vesicular stage may fail to occur, but only small elevations that tend to immediately become purulent. These are often rather deeply seated in the cutis, and are several days in reaching full development, and many more in disappearing. Some of them do not quite reach the actual surface to dry off and be shed there, but disappear very gradually by absorption. Many, however, are at the surface, and their tops dry off and are shed, often, but not always, leaving a purple stain in the skin, which may be still a little raised above the general level, and if it exhibits a central depression, and where the eruption is considerable some such are sure to be observed, the condition is highly diagnostic of mild small-pox in its later stage. Such purple spots may be looked for in children upon the backs of the wrists in particular, and may be observed as late as the end of the fourth week of the attack, or later, but ultimately fade away. It is quite common for a considerable part of the commencing eruption to abort, and never reach a stage beyond minute pimples which die back, or gradually disappear by absorption.

The other chief characteristics of mild small-pox include a comparatively slight constitutional disturbance. At the onset there may be rise of temperature, aching of limbs and head, more rarely of the back, vomiting or nausea, nasal catarrh. The complaint at this stage is likely to be considered a bilious attack, a cold, or influenza. Within two or three days these symptoms subside, and the patient feels better, and perhaps goes out until the rash is first observed somewhere between the third and seventh day from the onset. But in the mildest cases there may be no preliminary illness at all noticeable, and nothing is suspected until the rash appears. Usually some slight illness as that above described precedes the rash, invariably so where the case is marked with much rash. The pock marks, when any occur, are shallow, and tend to disappear. There are few permanent scars, frequently none. After the first symptoms of onset have passed off, most patients are happy in their minds and comfortable, and seem, but for the eruption, to be in their usual state of health. Termination by death may be said to be rare, and to result only when the disease has advanced to the more serious type.

In a disease of this description, the symptoms being so mild as to result in many of the cases being ambulatory, the difficulty of extinguishing the infection must of necessity be very great should it once become in any degree widespread, and in his efforts to isolate instantly every case as soon as it is discovered the medical officer is much assisted by ample accommodation for isolation in hospital. In this connexion the imperative necessity of wards being apportioned for quarantine observation of doubtful cases must always be borne in mind. Happily, at Cheltenham, at the moment of writing, the incubation period from our last case has elapsed without any case occurring, and the town may be said to be free of the disease. The conditions in the neighbouring town of Gloucester, eight miles away, are, however, less happy, and the menace of re-introduction of the infection here from that source is very considerable.

ETHYL CHLORIDE

AS AN ANÆSTHETIC FOR MINOR OPERATIONS IN CHILDREN.

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THE following notes on ethyl chloride anæsthesia in children are the outcome of my own experiences, extending now over some 18 years, and totalling upwards of 15,000 cases without a fatality. My remarks apply only to the anæsthetic as used for children; at the same time, I am of opinion that for all practical purposes they apply equally well to adults, as has been proved in adult cases under my care. The adult, however, takes nitrous oxide gas much better and more effectively than the child, and this modifies the situation, so that in the present article I prefer to leave sub judice the question of the best minor anæsthetic for the adult.

As is well known, opinions are not all favourable to the use of ethyl chloride; but I cannot help taking the view that unfavourable opinions have been based upon results due to the use of unsuitable or imperfect apparatus or some other easily explainable factor, and that where fatalities have occurred quite special circumstances must have been present, or the administrator or operator have taken unusual risks. My experience has been gained in my capacity as dental surgeon to the Queen's Hospital for Children, where practically all of my cases are out-patients.

In the dental department of a large children's hospital a great deal of extraction has perforce to be done, particularly when, as is the case here, the patients are drawn from slum areas. Among out-patients, at any rate, there has been practically no selection of cases, the anæsthetic having been given to all and sundry, of good physique and poor, of all nationalities, and of ages varying from 18 months up to 14 years, which is the hospital age limit. Many of these children have had pronounced cardiac murmurs, or serious pharyngeal obstruction from tonsils or adenoids, and in countless other ways have not been by any means ideal subjects for any anæsthetic. It was, therefore, most essential that the anæsthetic used should have a large margin of safety, and as ethyl chloride has stood the test so well, this brief résumé may encourage others to give it a trial.

Dental operations of a necessity impose a certain limitation on the anæsthetist; ethyl chloride cannot very well be given while the operator is at work, and in consequence I have had no experience in any endeavour to maintain a patient at an anæsthetic level after the acme has been reached, although a repeated dose, or even a third dose, has often been

given during a lengthy or difficult operation. Sometimes considerable bleeding in the mouth is also a feature that cannot be ignored.

The qualities necessary in a good minor anæsthetic are, briefly, safety, ease of administration, reasonable duration of anæsthetic period, and rapidity of induction and recovery. How does ethyl chloride satisfy the above requirements?

Safety.

With regard to safety, the figures given above speak for themselves. They represent an unbroken series of administrations since 1903 by a long chain of resident doctors of the hospital staff, many of them quite new to the anæsthetic, and in no case specialists. The apparatus used can be understood at a glance; a small rubber bag with one opening only, by which it is connected to a face-piece, a stop-cock intervening. Inside the bag is a clip which holds a piece of sponge, and leading to this a tube down which the ethyl chloride is sprayed, a little plug closing its orifice when the bag is charged. Face-pieces can be had in two or three sizes and are interchanged readily; it is important that the size should conform to the patient. Those unfamiliar with the apparatus cannot do better than refer to any illustrated catalogue of anæsthetic appliances. This apparatus is designed for to-and-fro breathing into the bag only, and this is the method advocated; the older way of breathing with admixture of air I consider obsolete and unsatisfactory, after having given it a fair trial.

The ethyl chloride is obtained in graduated bottles of 60 c.cm., and can be sprayed out by means of a specially designed valve and lever; only one hand is necessary to work it. A good administration gives a very fair margin of complete anæsthesia after the acme is reached and the face-piece removed from 20 to 30 seconds is a usual time—enough in most dental cases in children for all the necessary extractions. A very few breaths suffice to attain full anæsthesia, and it is the most rapidly-acting of those in ordinary use. Recovery is quick, at any rate in children, far quicker than from ether or chloroform, and delayed recovery is uncommon.

The dose sprayed into the bag will vary in children from 2 to 5 c.cm. according to age; the latter amount should be sufficient for a boy or girl aged 13 or 14. If the case is the first—i.e., if there is no residue of anæsthetic left from a previous administration—an extra 2 c.cm. should be put in, but where a number of administrations are to follow each other closely the quantities above will suffice after the first. The extra amount seems to be necessary to produce a preliminary saturation of the sponge, &c.

I hold that the only serious rival to ethyl chloride for our purposes is nitrous oxide; in safety there may be little or nothing to choose between them, but my record of N_2O cases is so much less in number, that I must be content to leave it as a debatable point, merely saying that I have seen no fatalities with either.

Administration.

When we come to administration, even the simplest N_2O apparatus will have difficulties for the inexperienced, and this, as I have invariably observed, leads to considerable waste of gas, and not infrequently to bursting of the supply tube or some other calamity.

In type and duration of anæsthetic period the superiority of ethyl chloride is most manifest. Ethyl chloride anæsthesia is quiet and of a comfortable length, usually with muscular relaxation; N_2O, on the other hand, causes marked and sudden rigidity, opisthotonos, or other contortion, and frequently vigorous screaming, the instant that an instrument is applied. So marked is the difficulty with N_2O that it may be safely stated that, from a dental standpoint, one administration of ethyl chloride will equal three of the former in effectiveness.

Ethyl chloride has one drawback, and so far as I am aware, one only—its odour, which comes as a surprise to the small patients, and may cause struggling or holding of the breath. I think it, therefore, a good plan to spray a little into the bag to start with, and after a breath or two to add the full dose; this will do much to obviate the natural alarm.

A Typical Administration.

The following is a description of the method followed in my dental clinic. The mother will have been instructed not to give the child any food for about four hours prior to the operation. The child is practically always in a sitting position in the dental chair, but at times—e.g., when wearing certain splints—the lying down position is adopted. A nurse stands in front to control the patient's hands, and restrain any tendency to slip down in the chair as anæsthesia progresses. A gag having first been placed in situ, the anæsthetist with a bottle of ethyl chloride in a convenient pocket now places the face-piece of the apparatus accurately over the child's mouth and nose so as to prevent all leakage. After a breath or two a little ethyl chloride is sprayed down the tube, and finally the full dose, and the tube then closed with the stopper. In good breathers a very few full breaths will suffice, and full anæsthesia is quickly reached. This can be most readily judged by the breathing, which becomes deep, rhythmic, and stertorous; the pupils become fixed and dilated, with loss of reflexes. Generally speaking, after, say, the third stertorous breath, the patient is ready, and a useful period of quiet anæsthesia results.

A point of great importance in administration is the complete exclusion of all extraneous air; a leaky apparatus or an imperfectly adjusted face-piece means a long induction, uncertain and noisy anæsthesia, and embarrassment of the operator by a struggling patient. The anæsthetist will require both hands to hold the face-piece accurately in position, particularly if the patient is restless; frequent removal of one hand for the purpose of testing the eye reflexes is to be deprecated, nor is it necessary after a little experience, as the acme of anæsthesia can readily be noted by the character of the breathing. Generally speaking, the quicker the patient goes under the better the anæsthesia, though this must not be taken to mean that results are proportional to the amount of the dose nothing is gained, and certain risks are incurred by an overdose.

Difficulties Met with in Administration.

(*a*) *Holding the Breath.*—This is common with the older children, and though it delays matters a little does not seriously affect the result; as is mentioned above, it may often be avoided by not spraying in the full dose all at once.

(*b*) *Forward Sagging of the Patient's Head.*—The chin being depressed downwards on the thorax, breathing may be considerably hindered. This may be easily dealt with by the nurse or operator pushing up the chin.

(*c*) *Laryngeal Spasm.*—This may occur now and then, more particularly if the dose is rather large or has been abruptly administered. Should this happen, the face-piece must be removed until normal breathing has been restored, when one can carry on.

(*d*) *Syncopal Attack.*—Normally ethyl chloride acts as a cardiac stimulant, and the colour becomes rosy even in the pale; hence, no doubt, its safety. Here and there in the course of many cases syncope may be encountered, readily recognisable by the bluish pallor which supervenes. No alarm need be felt if the breathing continues regularly. Stopping the operation temporarily and inversion of the patient for a few seconds will restore the colour; usually it will then be possible to complete as may be necessary. Further measures are very rarely called for.

(*e*) *Obstructed Breathing.*—This will be encountered more often; there is a tendency for the tongue to swell or fall back in some cases, and of course there may be adenoids or large tonsils present. Should breathing stop, it is easily dealt with in dental cases by the operator, who, being in front of the patient with the latter's mouth gagged open, hooks the forefinger of the left hand well over the root of the tongue and draws it forward, at the same time pushing up the chin with the right hand; breathing nearly always restarts at once.

(*f*) *Vomiting.*—Only when instructions as to abstinence from food have been disregarded is vomiting likely to occur during the administration. If blood is swallowed—e.g., in dental or throat operations—subsequent vomiting is unavoidable.

I am of opinion that certain cases of fatality under ethyl chloride could have been prevented by the

prompt freeing of the air passages, as in the simple method described, and would suggest that whenever the operation to be performed permits of it, a dental gag should be placed in situ before administration; the saving of time where it is necessary to assist the patient to breathe being of the utmost importance. The gag used is that known as Brunton's, and acts between the front teeth; it is held in position by an adjusting spring, and is not so easily dislodged as other kinds. Its two pads or cups which engage on the teeth are connected by a hinged arm of rectangular shape, which projects forwards, and is readily swung to one side out of the way when instruments or fingers are placed in the mouth. It must not be confused with any form of gag opened by handles, which latter should, as far as possible, be avoided, as in any but very skilful and careful hands they are apt to do damage. There is a face-piece specially designed for use with the Brunton front gag, which has plenty of room inside it, being shaped to accommodate the arm of the gag; this pattern is invariably used at my clinic.

In this brief account I omit opinions and figures from other sources. No doubt in some cases they might appear to conflict with my own experience. I can only suggest in explanation that practically all my patients have been under the age of 14, and that I am dealing with the closed form of administration only. Within these limits safety certainly seems to lie, whatever may be the case outside them, always provided that the simple precautions given above are observed. The perfect anæsthetic has no doubt yet to be found, but in the meantime ethyl chloride has a great sphere of usefulness for those who know its value.

A SLIDE PRECIPITATION TEST FOR SYPHILIS.

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IN the performance of a large number of Wassermann reaction (W.R.) tests one meets with occasional weak or very weak positive results, some of which are undoubtedly non-specific. In the absence of signs or history of syphilis these reactions are usually disregarded. Nevertheless from the fact that, with the use of cholesterolised antigens, non-specific weak results are obtained even with the most careful technique,[1 2 3 4 5 6] it is probable that the positivity of the stronger reactions will sometimes be augmented in a similar manner. To control the cholesterolised antigen tests various modifications of the W.R., to be run in parallel, have been suggested; these being mainly the use of simple tissue extracts without added cholesterol, the use of acetone insoluble lipoids, and alterations of the usual time and temperature of the primary incubation. Where large series of tests are performed there are practical difficulties in conducting two series in parallel by different techniques. What is wanted is a control which is simple and rapid, consistently with accuracy, so that it can be performed at the same time as the W.R. The Sachs-Georgi (S.G.) test, introduced in 1918,[7] provides a control which has given satisfactory results in the hands of many workers. It has many advantages over the W.R., the chief being the reduction of the reagents, and especially the elimination of the most unreliable reagent, complement. But the length of incubation required—from 7 to 48 hours according to different workers—is a drawback to its use as a routine control.

It was shown by Coca 12 years ago[8] that the cholera vibrio could be readily agglutinated with anti-cholera serum on a slide by a rocking movement imitating the convection current of the water-bath, and this method has since been extended and elaborated by other workers, notably by Garrow.[9] Five minutes on the rocking slide will, in the case of the intestinal organisms, give results parallel with those given by the tube method, though at a slightly lower level. It therefore seemed possible that the same method might be applicable to the S.G. test, and this was found to be the case. Doubtless many have tried this method, but I have seen no published results, and as the method seems a satisfactory and very simple control of the W.R., I venture to present my own findings.

TABLE I.

Five Hundred Sera.

W.R.	Slide S.G. 1/40	1/20	1/2 to 1/10	Nil.	Totals.
Strong positive ..	95	6	4 (A)	0	105
Moderate positive ..	8	12	4 (B)	0	24
Weak positive and doubtful	1 (C)	3 (D)	29	53 (E)	86
Negative	0	2 (F)	38 (G)	245	285
Four Cerebro-spinal Fluids.					
Strong positive ..	1	1	0	0	2
Weak positive	0	0	1	0	1
Negative	0	0	0	1	1

Explanation.—Strong positive W.R. = fixation of 8 or more M.H.D. of complement; moderate positive = fixation of 5, but not 8 M.H.D.; weak and doubtful = fixation of <3 to 3, but not 5 M.H.D.; negative = no fixation or the merest trace.

These parallel tests on the 500 sera can be expressed in another manner (Table II.).

TABLE II.

Dilution giving precipitation.	Complement M.H.D. fixed. 30	20	16	12	8	5	3	<3	0
1280	1	—	—	—	—	—	—	—	—
640	—	3	—	—	—	—	—	—	—
320	2	6	4	—	2	—	—	—	—
160	2	6	8	5	6	—	—	—	—
80	—	1	3	9	12	1	—	—	—
40	—	1	2	2	20	7	—	1	—
20	—	—	—	—	6	12	3	—	2
10	—	—	—	—	4	2	9	5	8
5	—	—	—	—	—	2	2	6	13
2	—	—	—	—	—	—	4	3	17
0	—	—	—	—	—	—	25	28	245

On an average therefore:

Fixation of { 20, 16, 12, 8, 5, 3 } M.H.D. corresponds to precipitation at { 1 in 320, 1 in 160, 1 in 80, 1 in 40, 1 in 20, 1 in 10 }

Technique.

In Tables I. and II. are given the results of parallel W.R. and slide S.G. tests on 500 sera and 4 cerebro-spinal fluids. In all cases the W.R. has been performed by the technique known as the Rochester Row method,[10] with the addition of a third row of tubes carrying 8 minimum hæmolytic doses (M.H.D.) of complement. Sera fixing 8 M.H.D. were then put up with 12, 16, 20, and 30 M.H.D. The slide is 29 by 5 cm., cut with a diamond into 20 compartments; this allows of four sera with their serum controls being tested in four dilutions at the same time. Those sera which were positive in these dilutions were then put up in higher dilutions to extinction of precipitation. For the volumes of serum dilutions and antigen pipettes of No. 52 Starrett wire gauge were used, one being kept for the serum dilutions and one for the antigen dilution. The sera were put up in drops of neat serum, and dilutions of 1 in 2½, 1 in 5, 1 in 10, 1 in 20, &c., and one drop of antigen dilution added to each except the serum control, which consisted of one drop of neat serum and one drop of saline. For convenience these final dilutions are spoken of as 1 in 2, 1 in 5, 1 in 10, 1 in 20, 1 in 40, &c., though actually they are, according to my calculations, 1 in 1·7, 1 in 4·5, 1 in 9·1, 1 in 18·2, &c. Rotation of the slide, either by hand or by means of

a clockwork device similar to Garrow's, over an angle of 45° on either side of the horizontal, was carried on for five minutes, when the results were read by a watchmaker's lens, and expressed as one, two, or three + according to the size of the flocculi. In the tables one + is taken as the limit of precipitation, though generally a trace was observed in the next higher dilution. The antigen used has been a mixture of alcoholic human heart extract and 1 per cent. alcoholic cholesterol in the proportion of 3 to 2 parts. The same antigen has been used throughout the W.R. tests, but in a different dilution. Bordet's antigen plus cholesterol was tried, but appeared to give no better results than the crude heart extract. Just as in slide agglutination a suspension four or five times the density of that used in tube agglutination is necessary to obtain results that can be easily read, so a much more turbid antigen is required for the slide S.G. than the W.R. With a dilution of 1 in 10 or higher the precipitation is very slight even with high concentrations of strongly positive sera. A dilution of 1 in 5 appeared to give the best results, the antigen being measured into a dry tube and the salt solution slowly dropped into it from a height of 12 inches. Holker[11] has pointed out that though the concentration of NaCl in the W.R. is limited to 0·85 per cent. there is no such limit in determining the optimum conditions for the interaction of serum and antigen alone. Consequently various concentrations of NaCl and of other electrolytes were tried. It was found, however, that in the higher concentrations (from 5 to 30 per cent. NaCl) spontaneous flocculation occurred more or less rapidly. Concentrations of 1 to 5 per cent. gave fairly stable antigens, but the results with positive sera were no better than with ordinary saline (0·85 per cent. NaCl). Further experiments in this direction will be conducted. An antigen diluted 1 in 5 with saline is stable and keeps its sensitiveness unimpaired at least for several days.

The sera were heated at 56° C. for one hour before testing. I do not think there is any perceptible advantage in this period over the usual half-hour for the W.R., though Dreyer and Ward recommend 1½ hours. A number of sera were tested in parallel by slide and tube S.G.; in the latter the technique of Dreyer and Ward[12] was followed closely, the results corresponding very nearly. With strongly positive sera the "zone phenomenon" is manifested on the slide as in the tube—i.e., the 1 in 2, and 1 in 5 dilutions frequently show less precipitation than the next three to five dilutions.

Analysis of Results.

Of these 500 parallel tests a superficial examination shows agreement in 395 (79 per cent.), and disagreement in 105 (21 per cent.); and of the latter the W.R. yields stronger results than the slide S.G. in 61 (12·2 per cent.), and the S.G. than the W.R. in 44 (8·8 per cent.). Further analysis of the cases shows that in neither of these groups is the one or the other test entirely correct. The evidence on which such analysis rests is too lengthy to be published in extenso, and it is admittedly incomplete, but is given without known bias.

Group A, 4 cases, strong positive W.R., weak S.G. So far as can be judged from previous W.R.'s, and from clinical notes supplied, the W.R. more correctly reflects the condition in all four cases.

Group B, 4 cases, all moderate positive W.R.'s, two showing precipitation at 1/10, and two at 1/5. These are all old treated cases, in which the W.R. may be more correct in two, and the S.G. in two.

Group C, one case incompletely fixing 3 M.H.D. (± − −), and showing precipitation at 1/40 dilution. The S.G. is more probably correct, since the case gave three previous strong positive W.R.'s, the last three months earlier.

Group D, 3 cases, in all of which the S.G. is more likely to be correct, two having given three previous strong positive W.R.'s, and the other being on old untreated case.

TABLE III.—RESULTS OF RETESTING SERA OF FORTY-SEVEN CASES.

W.R. (M.H.D. of complement fixed.)		S.G. (Dilution giving precipitation.)		Interval in months.	Remarks.
1st	2nd	1st	2nd		
		0	0		12 cases—9 treated syphilis, 1 doubtful, 2 not syphilis.
		0	2	2½	Old treated case; 2 negative W.R.'s previous to first of tests.
		5	5	1	Old case; 3 courses before first tests, which succeeded a number of postive W.R.'s.
0	0			½	Old case with 2 previous neg. W.R.'s.
		10	5	3	Old case; no pos. W.R. for over 2 years.
				3	Treated case; pos. W.R. 2 months before first tests.
		10	0	½	No signs, but had syphilitic baby 7 months before first tests; no treatment, but provocative injection before second tests.
3	3	10	5	½	Treated before tests and further treatment between. Pos. W.R. 4 months before first tests.
3	3	0	0	½	Incomplete treatment 3 years ago; further treatment between tests.
8	8	80	20	3	16 years. Treated. Previous pos. W.R.'s.
		80	80	2½	7 years. No treatment till after first tests.
0	3	0	0	2½	2 years. Treated. Long series of weak and neg. W.R.'s.
0	12	0	80	4	4 months. Treated before first tests; provoc. injec. before second.
		5	80	2	Over 1 year. Treated before first tests. Previously 2 pos. W.R.'s.
5	8	20	40	3	2½ years. Several courses; 8 previous pos. W.R.'s. Provoc. injec. before second tests.
		40	40	2	1 year. Two courses; 3 previous pos. W.R.'s. Provoc. injec. before second tests.
		0	0	1	Not syphilis; sent because mother syphilitic. Provoc. injec. before second tests.
3	0	0	0	2	Old case treated before first tests, not since.
		0	0	½	Not syphilis. Eye case. Provoc. injec. before second tests.
		10	2	2½	Old case; 4 courses. Second test was first neg. W.R.
3	3	0	0	3	3 months. Treated before and between tests.
		10	0	1	Case of diphtheria previously mentioned.
		0	0	3	Not syphilis. Child of syphilitic mother treated before child's birth.
		0	0	½	Not syphilis. Multiple growths of bowel. Provoc. injec. before second tests.
		0	0	2	8 years. Treated (several courses). Many earlier pos. W.R.'s, but last one neg.
3	0	0	0	½	Nothing but history of repeated abortions.
		0	0	1	Not syphilis. Psoriasoid rash at intervals. No treatment. Provoc. injec. before second tests.
		2	2	4	Nearly 3 years; 4 courses before first tests; further treatment since. Several previous pos. W.R.'s.
		10	0	2½	2 years. Treated. Last 5 W.R.'s all neg. Last pos. nearly 2 years ago.
		80	40	2½	Treated since first tests, not before.
8	5	40	20	2	Chancre shortly before first tests. Treated since.
		80	20	2½	18 months; 2 courses before first tests, 1 between tests. W.R. neg. after first course, but pos. again 4 months later.
16	8	160	40	3	Tertiary syphilis. Treated after first tests.
16	3	40	10	2½	Duration unknown. Treated before and between tests.
16	0	160	20	2½	1 year; 2 courses before first tests, 1 between. W.R. came down after each course, and returned to positive again.
30	5	160	40	2½	6 months. Treated before first tests. No record of previous W.R.'s.

Group E, 53 cases. In this group it is difficult and often impossible to decide from the clinical and other evidence which test is the more correct, and it is just this class of case which particularly needs controlling. It is impossible to give an extended analysis of these cases, but on the whole I judge the W.R. to be more correct in 15 cases, and the S.G. in 38. Of the 38 cases in which the S.G. is judged to be correctly negative 20 are almost certainly not syphilis; these include four control cases of other diseases, to which further reference will be made.

Group F, 2 cases, both giving negative W.R.'s, and both showing precipitation at 1/20 dilution. Both were cases of known syphilis, one a recently treated case, the other an old well-treated case, which gave a strong positive W.R. (fixation of 16 M.H.D.) three months earlier. In both cases the S.G. is judged to be the more correct.

Group G, 38 cases. Four of these were probably not syphilis. The remaining 34 were all treated cases, and both tests may be considered correct, the difference being comparatively small—e.g., W.R. ± − −, S.G. 1/2 or 1/5.

Among the total cases are included 23 parallel tests on 22 patients suffering from other diseases, mostly scarlet fever, diphtheria, and nephritis, in none of whom was syphilis suspected. Of these both tests were negative in 17 cases. Four gave negative S.G. reactions and ± − − W.R.'s, which must be considered non-specific. The remaining case, which was tested twice, was a case of diphtheria, which on the twentieth day of the disease gave W.R. + ± − and S.G. precipitation at 1/10 dilution; tested again five weeks later during convalescence the results were W.R. ± − −, S.G. nil. There were no signs or family history of syphilis, and the weak positives of both first tests remain unexplained.

Summarising the analysis I conclude as follows:—

	Correct.	Incorrect.
W.R.	454 = 90·8%	46 = 9·2%
Slide S.G. ..	475 = 95·0%	25 = 5·0%

During the period covered by these tests there was an opportunity of retesting the sera of 47 cases. The results, which are of some interest, are shown in Table III., and are arranged in groups as the second W.R. remained stationary, rose, or fell.

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A FURTHER STUDY OF A PRECIPITATION TEST FOR SYPHILIS.

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IN a previous paper published[1] by one of us (C. Y. W.), the results of the precipitation test for syphilis on 200 serums were recorded. We have now applied the test to the serums of 200 further cases, using here, as before, the Wassermann reaction (W.R.) as control. Without exception, the results of the test were read before the controls were known or the clinical notes of the cases consulted. Any preconceived idea as to the nature of the cases or the development of the W.R. controls which might have prejudiced the results can therefore be ruled out. Excepting for one or two modifications, the technique followed here is precisely the same as that introduced in the previous investigation already published. Briefly stated, it is as follows.

[1] THE LANCET, 1922, i., 274.

Technique.

Antigen.—One part by volume of an alcoholic extract of heart (human heart 1 part, alcohol 3 parts; contact for three days at room temperature) is floated on 9 parts of saline in a tube kept at upright position. At the end of a quarter of an hour the tube, held at a slanting angle, is slowly rotated, the rotation to be continued for a quarter of an hour. The aim of the procedure is to obtain a *maximum turbidity of the fluid within the time stated.* As the result of further investigation we find that this diluted antigen should be used fresh, or within 24 hours, otherwise it tends to lose its efficiency. The undiluted alcoholic extract keeps well for many months, and in our experience for at least a year.

Tested Serum.—This is heated *on the day of the test* for 20 minutes at 55° C. in a water-bath. If the amount of serum available is small (say 1 or 2 drops) it should be diluted previous to inactivation.

Procedure of Test.—One tube, instead of two, is now used for each serum. To the tube, with a Wright's pipette, measure 5 drops of saline and 1 drop of the heated serum. If this had already been diluted to the required strength (1 in 6) before heating no saline is here added. Using the same pipette, place 6 drops of the prepared antigen. This gives a final dilution of about 1 in 10, allowance being made for the smaller volume of the antigen as delivered in drops. The tube is shaken and incubated at 37° C. overnight.

Interpretation of Results.—When the reading is taken the tube should be gently shaken up several times. A *positive* serum is signified by a distinct precipitation in the tube, with or without complete clearing of the fluid. The precipitate is fine and granular, and visible to the unaided eye. A *negative* serum is denoted by absence of precipitation, a few flakes floating in the fluid being disregarded.

Results.

A summarised result of the 200 specimens is given in Table I.

TABLE I.

—	Total.	W.R. +	Pp.T. +
Clinically syphilitic—			
Primary (chancre)	16	12	16
Secondary	45	44	45
Tertiary	16	7	9
Treated	15	6	9
Clinically non-syphilitic	108	5	5
Total	200	74	84

For the W.R. control a deviation of three or more doses of complement over that of the control tubes was accepted as indicating a positive reaction. It will be observed that there are ten disagreements in the series, in all of which the reaction was positive with the precipitation test (Pp.T) and negative with the W.R. The clinical history of these cases shows that four were chancres of five, three, two, and two weeks' standing respectively, one was condyloma in a congenital syphilitic child, one general paralysis of the insane, one locomotor ataxia, and three were treated cases. In order to furnish sufficient data to justify an opinion on the merit of the test we have combined the results of the first and this (second) series of investigations in Table II.

TABLE II.

—	W.R. + Pp.T. +	W.R. − Pp.T. −	W.R. − Pp.T. +	W.R. + Pp.T. −
Total 400 { First series ..	76	119	4	1
{ Second series ..	74	116	10	0
	150	235	14	1
	96 per cent.		4 per cent.	

The discrepancy between the two methods in the combined series therefore happened in 15 out of the 400 cases examined (4 per cent.). Ten of these 15 discrepancies have already been referred to and explained above. The remaining 5 belonging to the first series consist of 3 syphilitic and treated cases and 2 without clinical history.

Conclusions.

1. The test has been practised on the serums from 400 cases, and was controlled throughout by the W.R. An agreement with the W.R. was found in 96 per cent. of the serums.

2. Disagreements were shown in 15 specimens (4 per cent.), which comprise 13 clinically syphilitic cases and 2 unknown cases. Of the former, in every instance the reaction was positive with the precipitation test, but negative with the W.R. The latter consist of one positive and one negative W.R.

3. The findings would warrant the conclusion that the precipitation test as formulated above is as accurate as, and, in some cases of early and late syphilitic manifestations, even more so than the W.R. Further, the test is simple in application and involves the use of a minimum amount of serum, such as can readily be obtained from the finger.

We wish to record our indebtedness to Dr. Yeoh for providing us with some of the serums.

A CASE OF CHLOROMA.

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AND
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PATHOLOGIST TO THE MANCHESTER CHILDREN'S HOSPITAL.

THE following rare case of chloroma occurred in a boy aged 7 years, who was admitted to the Manchester Children's Hospital on Sept. 22nd, 1922, with the history that his eyes had been getting prominent for about a month. The previous history was good and he was a well-grown boy. There was a family history of tuberculosis.

Condition on Examination.—On admission to hospital there was a marked prominence of both eyes and a swelling about the size of a large plum over each temporal fossa. The boy appeared quite comfortable with the exception of headaches at times. There was no vomiting and his sight was good. The heart, lungs, abdomen, and urine were normal. The skin showed some bronzing for which we could not account. The exophthalmos was equal on both sides and so marked that a large amount of conjunctiva could be seen over the iris. There was no inflammation in either eye, though the eyelids could be closed only with difficulty. The tumour growth in each temporal fossa was hard and gradually sloped away to the surrounding parts. The patient was very prostrate and pallid.

Blood Examination.—The clinical laboratory report on the state of the blood on the 25th was as follows: Red corpuscles, 2,992,000 per c.mm.; white corpuscles, 5100 per c.mm.; hæmoglobin, 50 per cent. The red cells stained faintly but were fairly normal as regards form and size. No nucleated or other abnormal forms were seen. A differential count of the leucocytes gave the following results: Polymorphonuclear cells, 27 per cent.; lymphocytes, 67 per cent.; large mononuclear cells, 5 per cent.; eosinophil cells, 1 per cent. No abnormal leucocytes were found.

Course of Case.—After admission to hospital all the symptoms became gradually worse, the eyes more prominent, the tumour masses larger, and he died two weeks later, on Oct. 7th, after an illness which lasted only six weeks. A week before death the eyeballs became greenish and inflamed, and the lids could not be closed. Headache was a prominent feature towards the end. The temperature on admission was 100° F., and rose to 105° on the day before death.

Post Mortem.—The body weighed 39 lb. There was some brownish-yellow diffuse pigmentation of the skin of the flanks, lower third of the abdomen, and inner side of the thighs. The external characters of the tumour are shown in the photograph. No other growths, enlarged glands, or bone lesions were found. The tonsils were not enlarged. Heart normal, weight 115 g. Lungs, weight 230 and 210 g. There were some petechial hæmorrhages in the pleura covering the apex of the right lung, and both lungs contained scattered hard nodules about the size of a pea. The bronchial glands were enlarged and pigmented. There was a partly calcified caseous gland the size of a cherry-stone at the bifurcation of the trachea, and a completely caseous gland at the root of the right lung. Both lungs showed extensive bronchopneumonic patches. Stomach and intestines normal; no enlarged mesenteric glands or other tuberculous lesions. Liver, weight 730 g.; it was rather pale and contained some minute white rounded nodules. Spleen, weight 87 g.; rather soft and dark. Adrenals: The left adrenal contained a caseating tuberculous focus about the size of a pea.

The tumour on each side was situated beneath the temporal muscle, growing from the fascia on its under surface and infiltrating the muscle. It extended beneath the zygoma, into the orbits and over the superior maxilla. The bony structures were not invaded. The growths in the orbits surrounded and compressed the eyeballs, but these were not invaded. The lacrymal glands were both infiltrated with new growth. The tumour was firm in consistence, softer in the orbit than elsewhere. It had a peculiar greenish-yellow colour and exuded much greenish serum on section. The colour faded on exposure to air and became more yellowish. It was recognisable after 24 hours, and was not revived by peroxide of hydrogen. The formalin in which some portions of tumour had been kept retained a yellow colour tinged greenish for some weeks.

Patient's appearance on admission to hospital.

Skull and brain normal; there were no intracranial growths. Thymus and thyroid normal.

Microscopical Findings.—Material was hardened in formalin and sectioned by freezing in gum. The stains used were hæmatein-rubin and other simple stains, including those of Leishman and Giemsa. Sections from various parts of the tumour were tested with α-naphthol and dimethylparaphenylenediamine.

The tumour had the structure of a round-celled sarcoma. The cells were rounded or polygonal with a clear fairly abundant protoplasm and rounded nuclei. They were closely packed, with very little intercellular matrix, and often arranged in columns. Blood-vessels were very scanty and the amount of supporting connective-tissue stroma was small. The cells did not contain granules staining by Leishman, Giemsa, or eosin, and showed no evidence of the presence of ferments giving the indo-phenol reaction. The nodules in the lung, liver, and adrenal were tuberculous. No secondary growths were found in any of the organs and there was no diffuse leucocytic infiltration. The changes in the spleen require further investigation, but the chief condition found was an increase in the amount of pulp tissue and evidence of active hæmolysis. The red bone marrow showed no conspicuous change, but only the sternum could be examined.

The case resembles previously reported cases of chloroma but differs in some respects. The colour of the growth was not absolutely characteristic. Apart from the changes in the spleen, it affords no evidence in favour of the view that chloroma is allied to the leukæmias. Possibly the association of tuberculosis of the lungs and bronchial glands followed by a miliary tuberculosis modified the progress of the disease and the changes in the organs.

THE FATALITY OF PUERPERAL FEVER.

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WHILE examining the rates of fatality of child-bearing over a long series of years a doubt has arisen as to the value of the fatality of puerperal fever when calculated on the number of cases notified (as published in the annual returns of notifications) and the numbers of deaths (as given in the annual reports of the Registrar-General). This memorandum has been written in the hope that someone more versed in statistical methods may be induced to express an opinion on the question.

From the latest report of the Registrar-General, that for 1921, it appears that 2211 cases of puerperal fever were notified in England and Wales during that year and that 1171 deaths were assigned to "puerperal sepsis"—Rubric 146 of the International Code. Those figures yield a fatality rate of 52·9 per cent. As soon as any examination is made of the rates obtained in the subdivisions of the country, it is seen that the rate just quoted cannot be accepted at its face value. In Table I. the subdivisions used by the Registrar-General have been followed.

TABLE I.—*Puerperal Fever, 1921.*

—	*England, excluding London.* Notified cases.	Deaths.	Fatality per cent.	*Wales.* Notified cases.	Deaths.	Fatality per cent.
England	2094	1060	50·6			
Wales	117	111	94·9			
London	353	142	40·2			
Aggregates of—						
County boroughs	968	440	45·4	19	18	94·7
Administrative counties	773	478	60·6	98	93	94·9
Urban districts	534	303	56·7	67	59	88·0
Rural districts	239	175	73·2	31	34	110·0

Variation of Fatality Rate.

A fatality rate varying in one year from 40·2 to 110 per cent. invites inquiry as to the causes of such variation and offer for solution a problem as to the true value of the rate. The hypothetical rate (110 per cent.) observed in the aggregate of rural districts in Wales hints at one explanation of the wide variation—viz., incomplete notification.

It appears to be reasonable to assume that notification will be more complete within the County of London than in any other part of the country. For the whole county the rate in 1921 was 40·2 per cent., but on examining the rates in the five groups of cities and boroughs which are included within the county, the rate varies from 28·5 (Central) to 48·6 (North) as shown in Table II. In other words, the variation ranges from 29 per cent. below to 21 per cent. above the rate for the county.

TABLE II.—*Puerperal Fever in London, 1921.*

—	Notified cases.	Deaths.	Fatality per cent.	Index numbers.
West	78	24	30·8	766
North	72	35	48·6	1206
Central	7	2	28·5	709
East	59	20	33·9	818
South	137	61	44·5	1007
London	353	142	40·2	1000

On taking out the rates for the individual cities and boroughs, still greater variations are found. As regards London, in the West districts the maximum rate was 62·5 (Kensington) and the minimum 14·2 (Chelsea)—a range of from 103 per cent. above to 54 per cent. below the rate for the group. In the North the maximum was 100 per cent. (Hampstead) and the minimum zero (Stoke Newington)—a range of from 106 per cent. above to 100 below the rate for the group. In the Central, the maximum was 100 (Holborn) and the minimum zero (City of London)—a range of from 251 per cent. above to 100 below the rate for the group. In the East, the maximum was 38·0 (Stepney) and the minimum 20·0 (Bethnal Green)—a range of from 12 per cent. above to 41 below the rate for the group. In the South, the maximum was 78·5 (Camberwell) and the minimum 22·2 (Lewisham)—a range of from 31 per cent. above to 50 below the rate for the group.

Setting aside the districts in which no death from puerperal sepsis was recorded during the year, the fatality, as obtained from the recorded numbers of notified cases and deaths, shows an amplitude of variation from 100 per cent. to 14·2—that amplitude occurring in an area in which it has been assumed that notification is most complete.

Outside the County of London there are 82 county boroughs (78 in England and 4 in Wales) and 61 (each) aggregates (or groups) of urban and rural districts (48 in England and 13 in Wales). Of the 204 areas, or groups of areas, 93 present special features.

In 10—2 C.B. (England), 6 A.U.D. (England, 2; Wales, 4), 2 A.R.D. (England)—there were 16 deaths and no notified cases.
In 28—11 C.B. (England, 10; Wales, 1), 3 A.U.D. (England, 2; Wales, 1), 14 A.R.D. (England, 11; Wales, 3)—the (114) deaths exceeded the (63) notifications.
In 28—13 C.B. (England, 11; Wales, 2), 5 A.U.D. (England), 10 A.R.D. (England, 6; Wales, 4)—the (180) deaths equalled the (180) notifications.
In 27—3 C.B. (England), 14 A.U.D. (England, 11; Wales, 3), 10 A.R.D. (England, 7; Wales, 3)—there were no deaths and no notifications.
C.B., County boroughs. A.U.D., Aggregate urban districts. A.R.D., Aggregate rural districts.

After elimination of the areas, and groups of areas, in the first two of the above four categories, the rates set out in Table III. are obtained.

TABLE III.

Aggregates of—	England, excluding London. Notified cases.	Deaths.	Fatality per cent.	Wales. Notified cases.	Deaths.	Fatality per cent.
County boroughs	944	396	41·9	18	15	83·3
Administrative counties	743	417	56·1	90	71	78·8
Urban districts	530	295	55·6	65	51	78·4
Rural districts	213	122	57·2	25	20	80·0
Totals	1687	813	48·1	108	86	79·6

England and Wales: fatality, 47·4%.

In 66 county boroughs, 35 aggregates of urban districts and 38 of rural, the deaths assigned by the Registrar-General to puerperal sepsis were, in each area or group of areas, *not in excess* of the notified cases of puerperal fever. The observed fatalities in the boroughs and aggregates have been tabulated at 10 per cent. intervals. (Table IV.)

TABLE IV.—*Puerperal Fever, 1921.*
England and Wales, excluding London.

Fatality rate per cent.	County boroughs.	Aggregates of— Urban districts.	Aggregates of— Rural districts.	All areas.
10–	4	—	2	6
20–	4 (1)	3	1	8 (1)
30–	9	2 (1)	4	15 (1)
40–	10	3	—	13
50–	11	9 (2)	9 (2)	29 (4)
60–	8	7	3 (1)	18 (1)
70–	6	4	5	15
80–	1	4 (1)	1	6 (1)
90–	—	1 (1)	—	1 (1)
100–	13 (2)	5	10 (4)	28 (6)

The figures in parentheses are those for Wales and are included in the figures preceding them.

Regarding Table IV. as an ordinary frequency distribution, the following means have been obtained:

	Per cent.
County boroughs	52·5
Aggregates of urban districts	60·5
Aggregates of rural districts	53·2
England and Wales	58·5
England	57·4
Wales	72·0

It appears to be almost hopeless to arrive at a conclusion as to the true fatality rate from the foregoing calculations. All that can be written is that the rates obtained raise suspicions that the notification of puerperal fever is very incomplete, and that in assigning deaths to puerperal sepsis the Registrar-General follows a rule differing from that adopted by the profession in diagnosing the disease. It has long been recognised that a definition of "puerperal fever" is wanted for the purposes of notification.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF LARYNGOLOGY: SUMMER MEETING.

THE summer meeting was held at the Manchester Royal Infirmary on June 15th and 16th, with Mr. C. A. PARKER, the President, in the chair.

The first part of the programme was devoted to the reading and discussion of papers.

Mr. DOUGLAS GUTHRIE (Edinburgh) read a paper on

Chronic Hyperplasia of the Upper Jaw.

He said that this disease, although rare, might furnish a clue to the solution of some of the problems of bone pathology. The microscopic appearance closely resembled otosclerosis, although the two diseases perhaps differed widely in their pathogenesis. Mr. Guthrie described two cases, of a boy aged 5 and of a girl aged 16, in both of whom the bony enlargement of the maxilla was unaccompanied by pain or other symptoms. Lantern slides were shown to illustrate three specimens from the Museum of the Royal College of Surgeons of England, including an upper jaw excised by Lord Lister. The relationship of the disease to leontiasis ossea, to unilateral hypertrophy, and to other osseous tumours was also discussed and illustrated.

Mr. T. B. LAYTON (London) said there were many types of this disease, some of which were typical examples of leontiasis ossea. It was essential to separate the types, but he considered that some microbic toxin was responsible and reminded the section that a similar disease occurred in the anthropoid ape and in the chimpanzee.

Mr. F. H. WESTMACOTT (Manchester), referring to his work on this subject, pointed out that the bony swelling involved the canine fossa and originated from the alveolus. The bony changes were always limited by the orbital plate, and a diminutive antrum of Highmore was present. He regarded the condition as a reversion to an embryonic type, a reconstruction of the bone, and in no way associated with infection.

Mr. J. ARNOLD JONES (Manchester), from a series of 53 cases, offered some

Clinical Observations on the Lingual Tonsil.

He divided the symptoms into three groups: (1) Vague aches, pains in the throat; (2) paroxysmal cough, and (3) dysphagia. The appearance of the lingual tonsil varied from a granular or varicose condition to definite gross hypertrophy. Discussing treatment, Mr. Jones referred to the dangers of removal of hypertrophies with the guillotine, and preferred painting the tonsil two or three times a week with a solution of 1 in 40 silver nitrate, or making linear cauterisations with the electric cautery. As to the results of treatment, out of 41 replies 11 reported cures, 11 great improvement, 15 improvement, and 4 no improvement.

The PRESIDENT and several members took part in the discussion, and it was generally considered that in the majority of cases the importance of the lingual tonsil in the production of symptoms was overestimated.—Mr. JONES, however, maintained that the lingual tonsil was often overlooked, and that the treatment which he had outlined, simple as it was, was worthy of a more extended trial.

Dr. D. R. PATERSON (Cardiff) discussed the

Treatment of Large Foreign Bodies Impacted in the Gullet.

He pointed out that in the majority of cases such bodies were impacted in the cervical portion of the gullet. The difficulty of extraction per vias naturales was frequently enhanced by the septic nature of the foreign body, its jagged or pointed contour, and the length of time it had been present in the gullet. He insisted on the importance of a careful and studied survey of the case before adopting endo-œsophageal treatment. Reference was made to the extreme rapidity with which some foreign bodies induced ulceration of the œsophageal wall, the presence of a fœtid odour or pyrexia being an indication for extreme caution during extraction. Any perforation, actual or suspected, of the œsophageal wall was an indication for an external œsophagotomy. Dr. Paterson invited opinions as to whether it was not sounder treatment to resort to the external operation in cases of difficult endo-œsophageal extractions or presence of sepsis, without actual perforation of the gullet wall.

Sir WILLIAM MILLIGAN advocated the use of the expanding œsophageal tube, and was of the opinion that an external operation should be performed if the point of the foreign body was deeply embedded in the œsophageal wall and difficult to extract.

Dr. WILLIAM HILL regarded foreign bodies with hooks or teeth impacted in the pharynx as an indication for the external operation.

Mr. MUSGRAVE WOODMAN (Birmingham) communicated a further study of the varieties of

Malignant Disease of the Nasal Accessory Sinuses,

with lantern demonstrations of microphotographs. He pointed out the necessity for acquaintance with the histology of the normal ethmoid, and considered that several sections of a tumour had to be made before a definite opinion as to its nature could be evolved. In conclusion he illustrated, by lantern demonstration, some further suggestions for the surgical treatment of this condition.

Mr. F. H. DIGGLE (Manchester) read a paper on

Diseases of the Thyroid Gland in their Relation to Laryngology.

He discussed the incidence of laryngeal and tracheal complications in benign diseases of the thyroid gland, with special reference to vocal cord paralysis and tracheal compression. He stated that of 34 cases examined during the last 18 months 7 presented such complications. He considered, however, that this proportion was probably too high. Of the 34 cases examined 20 were simple parenchymatous goitres, 6 adeno-parenchymatous, 6 exophthalmic, and 2 cystic goitres. He had only seen two cases of vocal cord paralysis in the cases examined, one a functional adductor paresis in a case of exophthalmic goitre and the other a right abductor paralysis due to hæmorrhage into a cystic goitre. After referring to the incidence of laryngeal paralysis in retro-œsophageal or retro-sternal thyroid extensions, he pointed out that tracheal compression or distortion was a more frequent complication. Radiographs were shown of two cases, aged 17 and 15 years respectively, illustrating bilateral tracheal compression and the relief of such after partial thyroidectomy.

Mr. H. TILLEY referred to a recent case in which an extension of the thyroid gland had insinuated itself between the thyroid ala and the lateral laryngeal wall, producing a bulging inwards of one-half of the larynx.

At noon on June 16th more papers were read.

Mr. D. L. SEWELL (Manchester), in a paper on the

After-treatment of Empyema of the Maxillary Antrum (Denker's Operation),

discussed the relative advantages of Denker's operation. He preferred to fashion a nasal flap, and to turn it on the floor of the sinus, packing it down with a narrow strip of bismuth gauze. He left the buccal wound unsutured, and on the fourth day removed the gauze through the buccal opening. Concerning subsequent irrigation of the sinuses, Mr. Sewell was of the opinion that the best results were obtained if no such treatment was adopted and only simple gentle nasal douching employed on and after the seventh day. For cases with persistent discharge in spite of such treatment he discussed the advantages of irrigation with silver nitrate and colloidal silver preparations. He was of the opinion that too zealous treatment by irrigation frequently spoilt an operative result.

Mr. J. F. O'MALLEY traced the

Evolutionary Changes which the Nose Undergoes in the Vertebrata.

Beginning with the lamprey and continuing through fishes, amphibia, reptiles, birds, and mammals to man, he traced the stages of the evolution of the nose with its accessory sinuses as present in man. Running parallel with the anatomical variations he demonstrated the physiological adaptations to origin, passing through the phases of a pure olfactory organ, then with powers related to assimilation and taste, and finally to that of a respiratory organ at first subsidiary to smell and then of equal importance.

Exhibitions of Cases and Demonstrations.

The afternoon of June 15th was devoted to the examination and discussion of several interesting clinical cases. The local members of the section, together with Mr. WOODMAN and Dr. DAVID THOMSON (Blackpool), had collected together a full and complete variety of cases which gave rise to instructive and useful discussion.

On the morning of June 16th Dr. P. WATSON-WILLIAMS (Bristol) demonstrated his technique and method of exploration of the nasal accessory sinuses.

Dr. IRWIN MOORE (London) demonstrated his method for the reduction or destruction of the hypertrophied or diseased tonsil by means of caustic soda and slaked lime (London paste).

An interesting demonstration of radiographs illustrating pharyngeal pouches, cardiospasm, and other lesions associated with the specialty were shown by Dr. Morrison and his colleagues in the new X ray department of the Royal Infirmary.

Dr. A. BURROWS showed cases treated by radium, and demonstrated his methods of application in malignant diseases of the nose, pharynx, and larynx.

The annual dinner of the section was held at the Clarendon Club on June 15th, and the dinner, as well as the other meetings of the section, were voted most successful functions.

SECTION OF OPHTHALMOLOGY.

A MEETING of this section was held on June 8th, under the presidency of Mr. A. L. WHITEHEAD, when a number of cases were shown.

Macular Change with Tremor.

Mr. H. M. JOSEPH showed a case of progressive macular changes associated with tremor. The patient was a woman aged 34. Two and a half years ago she had tremor of the right hand, but no visual defect. When he saw her for the first time two years ago there were light spots about both maculæ, and the corrected vision was 6/12. Since that date the spots had greatly increased in number. Vision had now fallen to 6/18, and the tremor was more marked and extensive. Wassermann was negative.

Mr. RAYNER D. BATTEN regarded the case as an adult instance of cerebro-macular disease. Probably the same toxin might be at work, producing different symptoms at different age periods. Infantile, juvenile, and senile types were now recognised, and the present case seemed to supply the missing link, the adult type. He entered into the reasons he held that view, and showed slides of various cases he knew of.—Mr. F. A. JULER referred to a case under Mr. Leslie Paton, a boy, aged 18, which Mr. Paton diagnosed as cerebro-macular degeneration, and said he (Mr. Paton) regarded it as a connecting link between amaurotic family idiocy and later cases of cerebro-macular degeneration.—Dr. GORDON HOLMES said he was familiar with this tremor since the epidemics of lethargic encephalitis. He did not suggest that this patient's condition was a sequel to lethargic encephalitis, but he thought the area of brain affected agreed in the two conditions. The most important pathological lesion in these cases was disease in the substantia nigra and in the neighbourhood of the mesencephalic nuclei; it seemed to be a primary degeneration of certain portions of the grey matter of the brain.—The PRESIDENT said that in the cases of encephalitis lethargica he saw he had not noted any fundus changes, a curious fact if the basal ganglia were affected.

Familial Nodular and Reticular Keratitis.

Mr. MONTAGUE HINE read a paper on this subject, based on three cases shown. This family, he said, helped to demonstrate a close connexion between the two conditions which did not appear so obvious when seeing individual cases. Mr. Basil Graves, who examined these three cases with the corneal microscope, aptly described the appearance seen in the two younger patients as a "fine sheeny speckling," and suggested that the tissue might be impregnated with a fine translucent granular deposit, which might have a refractive index different from that of the cornea. The girl, aged 10, gave a history of slight headache, but no intolerance of light. Right vision was 6/12, left 6/9. In her the opacity consisted of a number of fine lines, many of which were seen to be composed of tiny dots; but the lines here did not form a meshwork, but remained separated and uncrossed. One line suggested an obliterated vessel, resulting from previous inflammation. In the left cornea there was a combination of two of the linear opacities with several of the small rings, similar to those in her brother. The mother, aged 36, said that her eyes had worried her since infancy; she had not had them examined before February last, when she came to be tested for glasses. Right vision was 6/18, left 6/12. The central area of the cornea was seen to be studded with numerous, rather closely-set greyish-white opacities, some in the form of rings, others nodular, while in places the nodules became confluent. The periphery of the cornea was clear in each eye. The boy, aged 14, gave a history of severe headaches and intolerance of light since infancy. His corneæ showed very similar changes to those seen in his mother. There was one child whose eyes were normal. In all the cases the Wassermann was negative, but the maternal grandfather was said to have had syphilis.

Mr. H. NEAME spoke of a case under Mr. J. H. Fisher's care who had lines of opacity in one eye, and nodules in the other; the lines appeared to be at about the middle of the substantia propria.

Tuberculous Conjunctivitis.

Mr. R. L. REA showed a young woman, aged 23, with tuberculous conjunctivitis, in the form of ulcerative patches on the lids of both eyes. He had arranged for her to be sent to Leysin, in Switzerland, to have the direct sunlight treatment, from which he had seen there very good results. He hoped to show her again after she had received that treatment.

The Embryology of Congenital Crescents.

Miss IDA C. MANN read a paper on some suggestions on the embryology of congenital crescents, which was supplemented by some excellent micro-photographs and drawings shown by the epidiascope. The main thesis is as follows: The group of cases under consideration are characterised by the fact that they

are congenital, stationary, not necessarily associated with any one error of refraction, and situated, in 70 per cent. of the cases, below the disc. There is, apparently, some factor which determines the greater proportion of inferior crescents, which must be sought in the normal development of the disc, since an abnormality is more likely to be associated with a normally existing embryonic structure than it is to arise de novo as a pure aberrance. The embryonic structure in this case is the choroidal fissure. The presence of congenital crescents in other situations does not detract from the fact that the choroidal fissure is the determining factor in the inferior type. The presence of the fissure will merely account for the preponderance of this type, since the essential condition for the formation of a crescent is that the pigmented outer layer of the optic cup should not reach quite up to the insertion of the optic stalk. The presence of the fissure merely allows of this occurring more easily below the disc than elsewhere. From the illustrations shown it can be seen that the essential difference from the normal consists of the failure of the pigment epithelium and nuclear layers of the retina to reach the edge of the optic disc in its lower part; hence there is a small area below the disc in which all the elements of the retina except the nerve fibre layer are absent, so that this layer is separated from the sclerotic only by a very thin extension of the choroid. Developmentally it has been shown that eversion of the unpigmented layer of the optic cup normally takes place in the upper end of the choroidal fissure. This is seen in a large number of vertebrates. In some animals, including man, the small everted portion of the inner layer loses its connexion with the rest of the inner layer and disappears, but in some other types (birds) the connexion is retained and nerve fibres grow into the everted projection. If in man the everted portion developed aberrantly and retained its connexion with the inner layer, a condition resembling that normally present in birds might result. Such a condition is present in a congenital inferior crescent, which bears a striking resemblance to the structure of the lower part of the disc of the normal bird. It may be said that congenital crescents in any situation are due to the failure of the pigment epithelium to reach the site of implantation of the optic stalk. This failure may occur anywhere, since aberrant differentiation of the various parts of the secondary optic vesicle is known to occur. It is, however, much more likely to occur below the disc than elsewhere, since it is normal here at one stage of development in man. Hence the greater frequency of inferior crescents, which can be looked on as developmentally homologous with the cauda of birds, the architectural basis of the cauda being present, though small, in the normal human embryo. The failure of the choroid is directly correlated with the absence of the pigmented epithelium, and the occasional failure of the sclera has its parallel in the retardation of condensation along the fissure during development.

The PRESIDENT complimented Miss Mann on her exposition and the beauty of her slides.—Sir WILLIAM LISTER argued that the inferior crescent was a retraction crescent, similar to the ordinary retraction crescent of myopia occurring on the macular side.—Sir JOHN PARSONS agreed with Miss Mann's view. In many cases the condition was associated with failure in closure of the choroidal fissure. With regard to the myopic so-called retraction crescent—a term he did not like—he thought this was probably an atypical coloboma, and that it had no relation to the stretching of the walls of the globe associated with myopia.

Miss MANN replied that the presence of staphyloma below the disc could also be explained as part of the retardation of the sclerotic condensation along the lines of the fissure. She agreed that myopic crescents also had a congenital explanation, though in them some pathological process was superimposed.

Mr. P. DOYNE read a brief paper on the Tournay reaction, and it was discussed by Mr. J. H. FISHER and Mr. RAYNER BATTEN.

NORWICH MEDICO-CHIRURGICAL SOCIETY.

A CLINICAL meeting of this Society was held at the Norfolk and Norwich Hospital on June 5th, with Dr. ARTHUR CROOK, the President, in the chair.

Insulin in Diabetes.

Dr. H. J. STARLING brought forward two cases of diabetes to illustrate the benefits and limitations of insulin. Case 1 was a girl of 18 who was first admitted to hospital in October, 1919, with a long previous history of thirst and loss of weight. She had 32 gr. of sugar per oz. of urine with a total output in one day of 2030 gr. Starvation for five days made the urine sugar-free. This case for three and a half years had been kept on a very low carbohydrate diet, which she only varied occasionally when temptation overtook her. She had steadily increased in weight, had always been of a healthy colour, and had managed to establish her menstrual periods lately. Case 2 was a man, aged 30, admitted to hospital on April 16th, 1921, with high sugar excretion and marked acetonuria. Was kept in 12 months. Starvation for varying periods of 2–5 days made the urine sugar-free, but after 2–4 days of meat, eggs, and 10 oz. of 5 per cent. vegetables, sugar always reappeared, and his weight kept stationary. He was readmitted in June, 1922, in a condition bordering on coma; acetonuria and sugar excretion very high. As starvation did not result in abolition of sugar it was given up, and he was put on a diet containing 51 g. of carbohydrate and of 1435 calories per day. His daily output of sugar for the past six months averaged 784 gr. (46 g.) and he therefore retained a daily average of 77 gr. (5 g.) of carbohydrate. Insulin—10 units—was given on May 7th, and one slice of bread was given in addition to his normal diet, but the sugar excretion went up to 1560 gr. (93 g.). The daily amount of insulin was then increased, until for the past three days he had been having 10 units at 6 A.M., 20 units at 12, and 10 units at 6 P.M. = 40 units a day. For the past 48 hours he had been sugar-free, except for the specimens tested at 6 A.M. and 8 A.M. That dose of insulin was therefore about correct to enable him to retain the present intake of carbohydrate. The blood-sugar before insulin was given was 0·56 per cent., afterwards only reduced to 0·52.

Dr. Starling considered that insulin was of immense value in diabetic coma, in which condition 80–100 units should be given with large doses of glucose, preferably intravenously. He stressed the importance of frequent estimations of the blood-sugar. If that was not done there was only one other factor by which the dose of insulin might be graded. In order to prevent an overdose being given it was necessary that a small amount of sugar should always be present in the urine, which necessitated the blood-sugar remaining permanently at a higher level than that which the pancreatic cells could deal with. That practice was diametrically opposed to Allen's treatment, which aimed at keeping the urine sugar-free, and thus giving the cells of the islands of Langerhans a chance of recovering their proper function. When the sugar excretion could be controlled by dieting, insulin was not required, but its use was essential in a class of cases in which sugar was always present in the urine in spite of the most careful dieting. The highest percentage of blood-sugar occurred between 6 A.M. and mid-day, and thus the larger doses of insulin should be given in the morning. It was, however, dangerous to give the insulin over-night, as someone had suggested, as with no meal to follow symptoms of an over-dose might come on during sleep and be far advanced before any signs of it were observed. At present insulin therapy was in its infancy and the drug should not be given indiscriminately, or by anyone not fully conversant with its effects.

Exhibition of Cases and Specimens.

Mr. E. W. EVERETT showed four cases and specimens, including a boy on whom he had operated

for lateral sinus thrombosis. On March 17th he had done a radical mastoid operation. On the 28th the patient had a rigor, after which rigors occurred every second, third, or fourth day. The patient also had headache and a septic temperature, but no vomiting. After a very severe rigor on April 13th the boy was operated on; the thrombosis, which did not extend into the jugular vein, was thoroughly cleaned out and packed; after the operator and his assistant had changed their coats and gloves the jugular vein was tied above the origin of the facial vein. The patient made a good recovery.—Sir H. BALLANCE congratulated Mr. Everett on the result of his operation. In his opinion better drainage was obtained in these cases by ligaturing the jugular vein below the origin of the facial, and leaving the upper end of the jugular open for drainage.

Mr. Everett's second case was that of a woman who had obstruction to labour at term by a right ovarian fibroid which was impacted behind the uterus. Cæsarean section was done, and the tumour removed with great difficulty. The third specimen was a colossal ovarian tumour blocking up the whole pelvis, in a woman about eight months' pregnant. She was operated on before labour commenced, and the whole tumour and uterus, together weighing 38 lb., removed by Cæsarean section. The child was extracted alive, but died in half an hour. The operation was followed by severe secondary hæmorrhage. As no bleeding-point could be found she was treated by intravenous injection of gum—6 per cent.—and made a good recovery. Mr. Everett also showed a stone impacted at the vesical end of the ureter, removed by supra-pubic cystotomy.

A Case of Blastomycosis.

Dr. F. SUGDEN showed a case of blastomycosis in a man, aged about 25, which had been modified by treatment. The eruption was on the neck and the left hand corner of the mouth, and it at first sight looked like impetigo contagiosa. He came to the conclusion, however, that it was a fungus growth, and that the infection was probably derived from horses. After two examinations at the laboratory, the diagnosis of blastomycosis was confirmed. Treatment had been removal by a sharp spoon of the papillomatous growth at the margin of the eruption, followed by starch poultices and later the application of a modification of Dakin's solution. There was considerable improvement, though not a permanent cure.

Dr. S. H. LONG showed a case of pseudo-hypertrophic paralysis in a boy of 8, who exhibited all the typical symptoms. Treatment by massage was of no avail in this case.

DALRYMPLE HOUSE, RICKMANSWORTH.—The report of Dr. F. S. D. Hogg, the superintendent of Dalrymple House, Rickmansworth (Homes for Inebriates Association), which deals with the year ending Jan. 31st, 1923, brief though it is, contains many points of interest to the medical profession. Owing, no doubt, to the financial and mental strain of the war, and the resulting sequelæ, there has been a notable increase in the number of patients who ascribe their alcohol habit to business and domestic worries, and some 33 per cent. of the inmates allege these as a primary cause. During the year 79 patients were admitted, nine of whom were drug addicts, and the remainder subjects of alcoholic excess. The private patients numbered 55 and those treated under the Inebriates Act 24. The ages of the patients ranged from 21 to 77, but Dr. Hogg points out that persons over 70 are rarely admitted as it is then found usually too late to hope for improvement. He states, however, that of three patients admitted during the past 21 years over that age, one continued to do well till the time of his death, and another, now aged 84, has not touched drink or drugs during the last 12 years. Very young patients also do not prove satisfactory, as they resent control and do not realise the need for any alteration in their habits. The average length of residence for treatment, taking the figures over a number of years, has been 20½ weeks, but in some cases a few days' residence has resulted in marked improvement, when discharge has followed. Recent years have seen an increased number of methylated spirit drinkers, and the suggestion is made that if methylated spirit were sold to the public "doctored" with tartar emetic the consumption of the liquid as a stimulant would be stopped.

Reviews and Notices of Books.

PRACTICAL MIDWIFERY.

By GIBBON FITZGIBBON, M.D., F.R.C.P.I., Master, Rotunda Hospital. London: J. and A. Churchill. 1923. With 175 illustrations. Pp. 534. 16*s*.

THE midwifery practice followed at the Rotunda Hospital is held in such high esteem that a text-book by the Master may well be regarded as authoritative. It is unnecessary to dwell on the sound teaching or to stress the particular respects in which the technique of the Dublin school differs from current practice in this country. Suffice it to say that the book is an excellent text-book, well planned and well stuffed with clear information. There are a few specially interesting ideas, notably in the section dealing with the difficult subject of retraction of the uterine muscle fibre. Dr. FitzGibbon considers that retraction follows from reduction in the intra-uterine tension, while contraction naturally follows uterine stimulation. Retraction therefore does not occur until contraction has produced an alteration in the intra-uterine tension sufficient to reduce it below the level required to maintain equilibrium. The author strongly recommends and describes clearly the many advantages of rectal examination during labour in preference to vaginal examinations. Schultze's method of detachment of the placenta is regarded as the normal and Matthews Duncan's is described as an abnormal method; the teaching that the former only occurs when the placenta is attached at or near the fundus of the uterus is not accorded any support. The statement that when the placenta is detached according to the mechanism outlined by Matthews Duncan the membranes are often torn and retained will hardly meet with acceptance on the part of most obstetricians. The need for a post-partum vaginal examination is stressed. The description of plugging the vagina is, as might be expected, very good: but it is perhaps unfortunate that the author should illustrate it being employed for central placenta prævia, since many authorities disapprove of its use for this condition. The account of the toxæmia of pregnancy is particularly clear; the author shows wisdom in making no attempt to include all the various theories of origin, for many of which there is in reality not much foundation.

The detailed description of the treatment adopted for eclampsia at the Rotunda Hospital will be read with much interest, since at the present time the non-operative treatment of this complication of labour is being widely advocated. It is instructive to see how strongly Cæsarean section, with its mortality of some 32 per cent., as a method of healing eclampsia is condemned. The Rotunda method, which includes gastric lavage, purgation, colon lavage, submammary infusion, poultices to the loins, and occasionally venesection or intravenous infusion has been carried out in some 214 cases with a total of 19 deaths, a death-rate of under 9 per cent. Under the heading of induction of premature labour, Dr. FitzGibbon describes the method of using a No. 20–24 soft rubber stomach-tube, which is pushed through the cervix and allowed to coil itself up below the presenting part, the whole of the tube being introduced into the lower uterine segment. The advantages claimed for this method are the ease with which it can be carried out, the certainty with which the tube can be sterilised by boiling, the minimum of manipulation, and the fact that the whole tube is contained within the uterus and nothing projects through the cervix into the vagina.

We have said enough to show that this book contains much of interest. The illustrations are good, there is a full index, and it may certainly be read by the student and practitioner as a safe guide to the best practice in midwifery.

DISEASES OF THE EAR.

A Practical Handbook for Students. By Sir WILLIAM MILLIGAN, M.D., Aurist and Laryngologist to the Royal Infirmary, Manchester; and WYATT WINGRAVE, M.D., Pathologist to the Central London Throat and Ear Hospital. London: William Heinemann. 1923. Pp. 191. 12*s.* 6*d.*

THIS handbook supplies sound instruction in a concise form on diseases of the ear, and may be read by the student as a reliable and authoritative introduction to otology. In compressing a large subject into the space of a small handbook, it is naturally difficult to decide what to omit, what to mention briefly, and what to describe at greater length. The authors do not appear to have solved the problem with entire success in this case; for, of the 178 pages of text, page 109 is reached before we have passed the external auditory meatus and arrive at diseases of the drum. Much of the detail about examination of the buccal cavity, pharynx, nose and naso-pharynx might well have been omitted; general practitioners have no occasion to use a palate retractor or the Weber-Liel tympanic tube. A number of pages are occupied by diseases of the auricle, many of which are very rare and of more interest to the dermatologist than to the otologist. By careful selection of matter more space could have been found for the all-important subject of otitis media in its various forms. Despite this lack of balance, the book has many merits. It is written in an interesting style, and the illustrations are plentiful and good; it should prove useful to the senior student, for whom it is intended, and we hope, with the authors, that it may stimulate a desire for increased information.

COLLOIDS.

Théorie et pratique des colloïdes en biologie et en médecine. By W. KOPACZEWSKI, Docteur en Médecine, Docteur ès-Sciences, Professeur à l'Institut des Hautes-Études de Belgique. Paris: Vigot Frères. 1923. Pp. 308. Fr.25.

THIS excellent and original book from the pen of one who has devoted much labour and thought to the subject of colloid chemistry will be welcomed. It is up to date throughout and the practical portions comprise much not generally included in works on practical colloid chemistry; in fact, it deals in a clear, though brief, manner with all the ordinary technique of physical chemistry which is likely to be involved in investigations on colloids; such methods as electric conductivity, cryoscopy, and concentration cells are fully treated. The chapters dealing with electric transport, viscosity, surface tension, nephelometry, and ultramicroscopy will be found to contain methods not given elsewhere. The whole work, which is well illustrated and provided with an excellent bibliography, should fill the need which is felt in France for such a book, and will assuredly find its way into the libraries of all in this country who are interested in the application to medical problems of the findings of colloid chemistry, for they could not have a better guide.

Klinische Kolloidchemie. By Dr. ERNST JOËL. Berlin, Dresden, and Leipzig: Th. Steinkopff. 1923. Pp. 124. 2*s.* 2*d.*

A SERIES of nine lectures dealing with applications of physical, and especially colloid, chemistry to medical practice. Though academic in form, they provide interesting reading for those sufficiently familiar with the language and with the elements of physical chemistry; if we may judge from the contents of these lectures, the average German clinician is more given to theorize than the English practitioner. Theories of colloid swelling play a large part in some of the hypotheses which are advanced in these lectures. It is certainly interesting, even if we are not inclined to follow all the author's reasoning, to see how extensive may be the applications of colloid and physical chemistry.

TUBERCULOSIS.

Environment and Resistance in Tuberculosis. By ALLEN K. KRAUSE, Associate Professor in Medicine, Johns Hopkins University; Director, Dows Tuberculosis Research Fund; Lecturer, Trudeau School of Tuberculosis, &c. Baltimore: Williams and Wilkins Company. 1923. Pp. 137. $1.60.

THE author, who is editor of the *American Review of Tuberculosis*, has compressed into two chapters much thought, and suggestions which provoke thought, on the subjects of environment and resistance in relation to tuberculosis. In the chapter on Environment doubts are cast on the general validity of the Andvord-Römer teaching that practically all the tuberculosis of adult life can be traced to auto-infection resulting from tuberculosis contracted in childhood. The author cannot help believing that the everyday life of man provides conditions that make for a not inconsiderable number of tuberculous re-infections from without, in which the time and quantity of re-infection may be so ordered as to cause a break-down. With regard to heredity, it is pointed out that nervous instability and over-irritability are certainly transmitted from one generation to another, and the suggestion is made that nervous irritability, which must regulate cellular activity in general, may ultimately be found to influence the origin and development of infections in a marked degree. In the chapter on Resistance the author ventures the opinion that allergy undoubtedly furnishess the key which bids fair to unlock the outstanding riddle of tuberculosis, "the mystery which so baffled early observers and so long delayed a more rational concept of the disease." The author pokes gentle fun at those who regard the most acute symptoms of tubercle as the products of mixed infection, and he considers the "mixed infection" view as really nothing more or better than the Virchovian doctrine that "the worst thing that can happen to a consumptive is that he becomes tuberculous." Whether he is enunciating truisms or propounding views perilously close to the heretical, the author puts his thoughts into words with commendable brevity and rare lucidity.

Lungentuberkulose. Second edition. By Dr. O. AMREIN. Berlin: Julius Springer. 1923. Pp. 141. 5*s.*

AN important function of a preface is to give the reader an inkling of the spirit in which the author has approached his task. The note which Dr. Amrein sounds in the preface to his book is one of modesty; he does not propose to startle his readers with new or unorthodox views, but to give them a summary of many years' first-hand clinical knowledge acquired in a sanatorium. The book is written for the practitioner in order to fill up gaps in his knowledge. But the book is also well worth reading by specialists—particularly by specialists who prefer new lamps to old and who, in running after the latest idea in tuberculosis treatment, are liable to forget the value of well-tried remedies. Take, for example, such a remedy as natural sunlight. It has lately become a fetish, and the success it has undoubtedly achieved in surgical tuberculosis has enticed the unwary and inexperienced into recommending it for pulmonary tuberculosis. Many ill-effects, including hæmoptysis, have followed sun-baths in phthisis, and this should be remembered. With regard to specific treatment and the choice of route by which to give tuberculin, the author is most impressed by Sahli's method of giving tuberculin by intracutaneous injection. Incidentally it might be remarked that less than a score of years ago the burning question was: Which tuberculin is the best? Now that the reputation of the various tuberculins is equally good—or bad—the controversy has turned on the routes, and the sceptical might be tempted to prophesy that in another decade or two all the routes will be con-

sidered equally good—or bad. The author deals in a perfunctory manner with Friedmann's vaccine, the Deycke-Much partial antigens, and so on, which a text-book cannot ignore, whatever their importance. A whole chapter is allotted to collapse therapy and much space to climatotherapy. Prognosis has a chapter all to itself—that rock on which many a clinical reputation has been built or shattered. Here the author is at his best, as one would expect of a physician with the long and intimate experience of tuberculosis that Dr. Amrein has had in Arosa.

Altogether a sound book greatly to the credit of the author.

LABYRINTH AND EQUILIBRIUM.

By SAMUEL STEEN MAXWELL, M.S., Ph.D., Professor of Physiology in the University of California. London and Philadelphia: J. B. Lippincott Company. 1923. Pp. 163. 10*s.* 6*d.*

THIS book is one of an excellent new series on experimental biology and general physiology, and presents an objective study of the equilibrium reactions of vertebrate animals, with especial reference to the part played in those reactions by the labyrinths. Subjective sensations and clinical applications of the present knowledge of this subject do not fall within the compass of the work. The basis of the account given is the author's own work on the labyrinth, and especially on the otoliths, of the dogfish, but frequent references to the extensive literature of the subject are made. There is also a discussion of the important part played by non-labyrinthine reactions in the orientation of the body; of these the most important are tactile, visual, and kinæsthetic reactions. The chapter on the mechanism of nystagmus is of especial interest. Much work has recently been done on this subject of equilibration and many gaps left by older work have been filled in; the book is, therefore, of considerable scientific value, and clinical applications would not be hard to find.

THE PHYSIOLOGY OF MIND.

An Essay. By FRANCIS X. DERCUM, A.M., M.D., Ph.D., Professor of Nervous and Mental Diseases in the Jefferson Medical College, &c. London and Philadelphia: W. B. Saunders Company. 1922. Pp. 150. 8*s.* 6*d.*

THE age-old problem of the interrelation of mind and body attracts the thinker to-day no less than in other generations, when controversies were apt to become somewhat acrimonious, and predispositions, religious and otherwise, were calculated to preclude serious attempts at reaching a solution. Not that in these days bias, conscious or unconscious, is unknown; it is rather that with new morphological, chemical, and physical considerations before him the thinker may make an approach to the question based on wider knowledge than was the case in many well-known instances of other years. We commend to the attention of the philosophically-minded Dr. Dercum's readable essay on the physiology of mind, in which from the standpoint of what would formerly have been dubbed "materialism" the writer endeavours to establish a biological interpretation of mental phenomena. Applying purely physical conceptions, he shows that these phenomena are in their essence physical, and holds that this view is substantiated by the facts of so-called psychophysics. "No neurone, no mind," might be taken to represent somewhat crudely Dr. Dercum's position. Perception, apperception, association, memory, and other processes can be explained by the transmission of impacts through the telencephalon. The collocation by the neurones concerned of the impressions received is thought. That any time at all is required for the response to sense-impressions is in Dr. Dercum's opinion significant as indicating that mental processes are essentially physiological.

INTOXICATIONS.

Traité de pathologie médicale et de thérapeutique appliquée. Vol. XXII. (Intoxications. Maladies de carence. Maladies par agents physiques. Affections médicales et traumatismes.) Published under the direction of ÉMILE SERGENT, L. RIBADEAU-DUMAS, and L. BABONNEIX. Paris: A. Maloine et Fils. 1922. Pp. 553. Fr.28.

THIS volume, the twenty-second of a system of medicine of 32 volumes, deals with poisons, deficiency diseases, diseases caused by physical agencies, and localised internal diseases brought to light or aggravated by trauma. In a system of such magnitude, many of the volumes containing 400 to 700 pages, the incompleteness of the volume under review is surprising. A few selected poisons are discussed, some scantily, others in great detail, but more than half the poisons enumerated in British text-books on toxicology receive no mention. It is possible that our interpretation of the word "intoxications" may be broader, but nevertheless a work which includes opium and cocaine should certainly include, for example, veronal and chloral. Corrosive poisons, the majority of the mineral poisons and alkaloids, and most of the so-called synthetic drugs are omitted, except in a general way in the introductory chapter. The apparent want of systematic treatment of the subject has probably come about through the system of a number of different authors each writing separate sections; the principle has many advantages, and in the majority of the separate articles the author concerned has shown himself to be a master of his subject.

The volume concludes with a short account of the deficiency diseases, written mainly from the clinical standpoint, diseases produced by physical agencies, a miscellaneous collection of subjects including frost-bite and sea-sickness, and a chapter on certain diseases, such as tubercle and cancer, which may come to light or be aggravated by trauma.

DE L'AUSCULTATION MÉDIATE.

Translation of Selected Passages from De l'Auscultation Médiate (first edition). By THEOPHILE H. LAENNEC. With a Biography by Sir WILLIAM HALE-WHITE, K.B.E., M.D. Medical Classics Series. London: John Bale, Sons, and Danielsson, Ltd. 1923. Pp. 193. 12*s.* 6*d.*

WE recently reviewed an edition of Auenbrugger's "Treatise on Percussion" and now we have before us a portion of the work of his equally illustrious colleague Laennec. To these two men the medical profession, until the discovery of X rays, owed all its capacity for discovering conditions inside the chest cavity, whether morbid or otherwise. Sir W. Hale-White contributes a careful biography of Laennec, who died, by an irony of Fate, from the very disease which his discovery did so much to elucidate and to diagnose—namely, pulmonary phthisis. His monument in bronze stands in the charming old Breton town of Quimper, where he was born in 1781, but he has another more enduring than bronze in the heart of our profession. Sir W. Hale-White's excerpts deal with Laennec's studies of pulmonary conditions only; his observations upon cardiac diseases are not illustrated owing to lack of space. But English readers may be thankful that they possess as much as this book contains of a work which will ever be held to be a classic. It is refreshing to see how generously Laennec recognises the value of Auenbrugger's discovery. Both observers have attained recognition from masters of fiction. Mr. Kipling, as Sir W. Hale-White notes, has written of Laennec as an honoured prisoner of war in England (although he never was there), and every one will remember Dickens's description of percussion, although he does not mention Auenbrugger by name, as used by the incomparable Durdles in Edwin Drood and his diagnosis "Solid in hollow; and inside solid, hollow again! There you are! Old 'un crumbled away in stone coffin in vault!"

THE LANCET.

LONDON: SATURDAY, JUNE 23, 1923.

MIDWIFERY WITHOUT TEARS.

WE announced last week the formation of a Departmental Committee[1] by the Scottish Board of Health to investigate the question of puerperal mortality and morbidity, and to suggest remedial measures. Our Berlin Correspondent, in reporting on another page a recent meeting of the Berlin Medical Society, shows how large a share social and economic conditions may have in the matter. But want of skilled personnel hardly accounts for the whole trouble, and without attempting to anticipate the findings of the Scottish Committee, we dare prophesy that too high a proportion of fatality and ill-health will be found attributable to sepsis introduced by the trained accoucheur or midwife. It is time to make a definite attempt to raise the standard of aseptic practice in midwifery as carried out at the patient's home. The main difficulty, we believe, is the distressing contrast between the technique exacted in a hospital or well-equipped maternity home and that which it is possible to achieve in a cottage. The young practitioner, or even the medical student while still on the district, soon gives up the struggle or indeed never properly engages in it. The better his training under surgically clean conditions, the more easily does he get disheartened, for his plight is extremely hard; it is that of the competent billiard-player used to a servile marker and a flawless surface, compelled to play matches for the rest of his life on a cloth untrue, with a twisted cue and elliptical billiard balls, if not—to complete GILBERT'S vivid picture—in a dungeon cell. The outlook seems so hopeless that the practitioner may fail to take even those precautions against infection which he could take without involving much extra trouble or expense, once some convenient adaptation of hospital methods had been thought out.

We commend to the serious consideration of all who have to face these difficulties the technique outlined by Lady BARRETT on page 1279 of our present issue. Sterilised accouchement dressings are put up by instrument-makers in sealed drums or containers, though not by any means generally used, while for the help of the non-affluent the local sanitary authority might reasonably be asked to supply sterile packets containing gown, sheet, towels, and gloves, if there was a general demand for such conveniences. Failing this, ante-natal clinics throughout the country could usefully devote money and energy to this form of service, even if it meant cutting down other less vital activities. Experts in midwifery practice are not likely to complain that the demands made by Lady BARRETT are exorbitant, although they are so much in excess, both in time and in the number and skill of assistants, over those usually available in general practice, that the family doctor may be tempted to dismiss them as impracticable. But the gulf between ideals and actual practice must be boldly faced. The present conditions can hardly be visualised by those in charge of extern departments or they would at least devise a technique with sterile packages for their own district cases. Probably not 1 in 20 practitioners uses gloves and not 1 in 50 a sterile gown. Not 1 in 100 insists on the patient being shaved, and still fewer employ an anæsthetist throughout the second stage, when, as Lady BARRETT indicates, immediate lacerations might be thereby avoided as well as later painful disabilities—midwifery without tears in either sense of the word.

It is not only an economic question. Many practitioners would protest that such precautions as are advised by Lady BARRETT are wholly unnecessary and that without them results are good enough. That must be determined by figures which are hard to obtain, for it requires courage to notify as puerperal fever every case of fever that occurs in the puerperium, and there is no uniform standard observed as to what is to be notified as fever. Such figures as are available are disquieting and we may expect enlightenment from the Scottish investigation. But the economic question itself is difficult. We do not clearly see how the services of an anæsthetist could be paid for, except in better-class practice, since even the appointment of a full-time official anæsthetist for this purpose alone would hardly suffice a district of any size where two or three practitioners might require his services at the same moment. But whatever the difficulties may be they are not insurmountable. Many of the commoner risks of childbirth will, no doubt, be mitigated by the gradual improvement of ante-natal diagnosis and care, whereby complications—which are for the most part to be foreseen and avoided—are more and more eliminated; labour then becomes the simple, straightforward business of transit of a correctly-placed fœtus through a genital canal known to be of sufficient calibre to pass it, when nature can be trusted to do all that is needed. But whatever the foresight observed, sudden complications may arise at any time during childbirth which will require the introduction of the hand or of some instrument into the genital canal, either of which must be frankly regarded as surgical treatment. We do not complain of the fact that practitioners do not attain sterile conditions for this minor obstetric surgery in the poorer homes. That would seem at present to be an impossible task. But we do protest against the attitude, happily becoming daily less common, of regarding such precautions as impracticable and beyond the reach of attainment.

[1] The Secretary of this Committee, Mr. C. L. Farmer, Scottish Board of Health, Edinburgh, would welcome offers of evidence from medical practitioners.

THE BASTARDY AND LEGITIMACY BILLS.

THE medical profession has in one sense no concern with questions of bastardy or legitimacy. When called in to attend a child, a doctor does not first demand to see the mother's marriage lines. But though medical science is not occupied with the registration and enforcement of social verdicts, it cannot ignore their effect upon the unmarried mother's health and peace of mind or upon the child's vitality. Sir GEORGE NEWMAN'S annual reports on the state of the public health have more than once alluded to the well-known difference in death-rate between legitimate and illegitimate children. In 1920, for example, the death-rate of the latter was double that of the former and was shown to decline more slowly during the 12 months of the first year. The difference is attributed to the greater prevalence of disease, to the mother's ill-health and neglect, and to the child's lack of maternal nurture and of home influence. Whatever the causes, the result is a phenomenon which, in the words used by the present Minister of

Health when introducing his Bastardy Bill as a private Member in 1920, accounts for the deaths of thousands and for the permanent lowering of the health of tens of thousands of children. The third reading of the Legitimacy and Bastardy Bills, achieved with less than the usual amount of obstruction on June 15th, will at least help to focus public attention on facts which ought to be disquieting to a country with a social conscience.

So far as legislation is concerned, the English attitude towards illegitimacy has always been severe. There was a famous occasion, in 1235, when the spiritual peers pressed that a bastard child should be regarded as legitimated by the subsequent marriage of its parents and should thus be allowed to inherit property. The earls and barons unanimously replied in a historic phrase that they were not prepared to alter the laws of England. From that day onwards this country has stood almost alone among the nations of Christendom in its attitude. Every year our overseas dominions give fresh adherence to the principle of legitimation by subsequent marriage. If, therefore, Mr. BETTERTON'S Bill passes into law, England will be merely falling into line as she has already done over marriage with a deceased wife's sister and as she will doubtless some day do over the adoption of children and over other social legislation with which the British nations overseas have previously experimented. The strictness of English law, which allowed the illegitimate child neither rights nor duties, neither a father nor a name, has been but little mitigated. Workmen's compensation benefit was long denied. In the case of war allowances and of the grant to unemployed workers' dependents Parliament was not ungenerous, "child" being sometimes defined as including illegitimate child. But on the whole our law of bastardy has moved but little in the last 50 years, except for the institution of "collecting officers" in 1914 (which makes it unnecessary for the woman to have any further communication with the putative father after the affiliation order has been made) and except for the 1918 increases in the amount of the weekly payments under an order, the maximum being raised from 5*s*. to 10*s*. It can hardly be maintained that even the new maximum is adequate or that the law is in other respects satisfactory. In effect the mother cannot get an affiliation order before her child is born. After the child is born, if she is not prevented by the restrictions in the law of evidence from getting her order, she may have considerable difficulty in enforcing it. The putative father sometimes manages to elude the jurisdiction altogether; even when liability is established, he may disappear from his last known address or may deprive the woman of payment because he prefers to go to prison for non-compliance with the order. These are some of the obstacles which Captain BOWYER'S Bill seeks to surmount. Its promoters, who, it seems, can now count on Home Office help, have prudently dropped one controversial feature (for registering the name of the alleged father and compelling him at the earliest moment to either admit paternity or clear himself) which appeared in Mr. CHAMBERLAIN'S similar Bill three years ago.

From the point of view of health it is hardly likely that legislation can do as much for the unmarried mother and her child as a progressive expansion of certain aspects of maternity and child welfare work which the public must be educated to support. The word "bastard" has harsh associations. The Labour party succeeded in eliminating it from the Army Act a few weeks ago, though they replaced it with the word "illegitimate,"—five syllables instead of two. "I suppose," said Mr. LANSBURY on that occasion, "it will be acknowledged that we none of us chose our parents." That simple fact is always worth restating in any discussion on the subject. It is not the child's fault that it is what we call illegitimate. The Labour party at any rate can take credit for its record in seeking to remove the legal and social disabilities imposed upon the bastard child.

MILD SMALL-POX.

AN outbreak of small-pox in the West Country is attracting widespread interest. Fourteen cases were notified at Gloucester on June 12th and four others on June 13th; it is understood that Dr. J. R. BIBBY, medical officer of health for Gloucester, has borrowed a medical officer from a neighbouring municipality to assist in dealing with the epidemic and is coöperating with medical officers from the Ministry of Health. The first case to be recognised as small-pox occurred in Cheltenham and was at first regarded as chicken-pox. Its origin remained undiscovered, but inquiries to which it gave rise revealed a number of cases scattered over the county and beyond its borders, all of which arose about 12 days after a visit to Gloucester, where there now appears to have been a considerable undetected focus of infection. The isolation beds at Longford have now been supplemented by ample accommodation at the Brockworth Aerodrome. We take this opportunity of printing a valuable article by Dr. J. H. GARRETT, medical officer of health for Cheltenham, in which he sets out the features of mild small-pox as they have come personally before his notice in this epidemic. He tells us that the cases are quite commonly being mistaken for chicken-pox or something else upon their first appearance, and the photographs which he has taken may be of assistance to the practitioner in differentiating between the two diseases. The distinction has to be made without the help of constitutional disturbance, which is the first of Dr. W. McC. WANKLYN'S four cardinal points. It is, indeed, a new kind of small-pox which is at present prevalent in this country. The Minister of Health informed an inquirer in the House of Commons on June 5th that none of the 520 cases of small-pox reported in England and Wales during the first three months of the present year had proved fatal, and he gave the accompanying table, which is instructive enough of the age-incidence of these cases.

Age-incidence of Notified Cases of Small-pox in England and Wales during January–March, 1923.

Age.	No. of cases.	Age.	No. of cases.	Age.	No. of cases.
—1*	11	23	6	47	4
1	6	24	4	48	7
2	16	25	8	49	5
3	11	26	3	50	5
4	9	27	4	51	5
5	12	28	2	52	3
6	22	30	1	53	4
7	28	31	9	54	1
8	23	32	5	55	3
9	30	33	2	56	4
10	26	34	8	57	1
11	29	35	4	58	1
12	27	36	3	59	1
13	26	37	4	60	2
14	14	38	5	61	1
15	15	39	3	62	4
16	10	40	1	63	1
17	15	41	4	64	2
18	5	42	1	67	1
19	7	43	4	77	1
20	9	44	4	78	1
21	6	45	3	81	1
22	6	46	7	N.S.	2

*—1, under 1. N.S., not stated.

The change of type in small-pox is made quite clear from figures furnished the same day by the Minister of Health; in London the small-pox death-rate per 100,000 of population was 36 in 1885 and 28·5 in 1902, whereas since the latter date the death-rate has never exceeded 0·6. Nevertheless, 24 fatal cases of small-pox occurred during 1922 in London and neighbourhood, the numbers being distributed impartially over the various age-groups, only 3 cases being under 10 years of age. In European countries prior to the Great War, the last year with any considerable small-pox death-rate was 1901 in Paris, 1891 in Vienna, and and 1912 in Italy. Particulars were also given of cases of small-pox and deaths therefrom in Japan, where notification is compulsory, and showed a high prevalence of a severe form in the years 1917–20.

Prevalence and Fatality of Small-pox in Japan.

Year.	Cases.	Deaths.	Year.	Cases.	Deaths.
1915 ..	17	3	1918 ..	1469	285
1916 ..	266	48	1919 ..	4056	1115
1917 ..	5122	1153	1920 ..	3167	844

The corresponding figures are not available for 1921 and 1922, but up to that time the disease was of a very different character from that prevalent in England at the moment. The fact is, as Dr. GARRETT reminds us, that small-pox, like other infectious diseases, may occur in any degree of severity. America and South Africa have both claimed to be the birthplace of the mild form of small-pox. But whether it is called amaas, alastrim, varioloid-varicella, Kaffir milk-pox, weisse Pocken, or anything else, mild small-pox is still small-pox.

UNITY, PEACE, AND MEDICINE.

THE execution of large mural paintings is a task, quite apart from the question of artistic ability, which has been considered beyond the physical strength of women. Miss Violet Oakley has ignored the difficulties and performed her work in a manner which has gained her recognition among the foremost American painters. Without any indication of unusual physical powers she has been at work on these colossal paintings, some of them 17 ft. high, for the last 20 years, being the first woman to receive the medal of honour from the Architectural League of New York, and the youngest artist ever awarded the gold medal of honour of the Pennsylvania Academy. The pervading idea of a remarkable exhibition now being held at the St. George's Gallery, George-street, Hanover-square, by Miss Oakley and consisting of drawings and collotype reproductions for the great mural paintings for the State Capitol of Pennsylvania, is that unity and peace among the nations is the panacea for every human ill. In an immense panel colour study that embodies her conception of "supreme manifestation of enlightenment in international unity," the figures of a surgeon and a nurse are seen casting scalpel and drugs into the waters that flow from the feet of the figure symbolising unity, to bathe the roots of the trees whose leaves are for the healing of the nations. The accomplishment in draughtsmanship and colour of this artist is noteworthy, but we find her hasty or sanguine when she removes from an ideal vision of a united world the ministrations of medicine, the greatest bond of union between the nations. Unity and peace will not kill disease; but with unity and peace there will come concerted action against disease, and in such coöperative efforts the various nations will find the readiest means of development and consolidating mutual goodwill.

Annotations.

"Ne quid nimis."

OXIDATION IN THE LIVING CELL.

THE days are rapidly drawing to a close when the teacher of chemical physiology can dismiss the later stages of metabolism by the satisfying statement that the substances under consideration are oxidised to carbonic acid and water. In the past anabolism has been very carefully considered and students have been taught at great length the mechanism of building up fats and carbohydrates. Katabolism, however, has been neglected, amino-acids are dismissed from thought after deaminisation, fats and carbohydrates are banished by that all-covering statement "they are oxidised to CO_2 and H_2O." Prof. F. G. Hopkins, in one of an admirable series of lectures delivered at St. Mary's Institute of Pathology and Research, which appears in the front of our present issue, calls attention to the vast amount of work now accumulating on the later stages of disintegration of the more complex substances produced in the body. All these processes involve two essential chemical actions, either oxidation or reduction, and, as Prof. Hopkins points out, the answers to all katabolic questions are to be found actually in the study of these processes. Oxidation, as defined by chemists, means an increase in the non-metallic or electro-negative part of a compound, whilst reduction means the opposite. From the biological standpoint, the definition really reduces itself down to the giving or taking away of oxygen. On the face of it, the question seems very simple. Carbon monoxide burns in oxygen to produce carbon dioxide—a simple example with no apparent difficulty. However, it has been shown that perfectly dry oxygen and perfectly dry carbon monoxide cannot be made to combine, and that water is essential to the process, and this applies to practically all other oxidations. Another complication was demonstrated by Wieland, who showed that even free oxygen was not necessary, since, by using platinum-black and damp carbon monoxide, carbon dioxide and free hydrogen were produced. Finally, v. Wartenburg and Sieg published in 1920 their scheme of the burning of carbon monoxide in oxygen; there is nothing imaginative about this scheme, for all the bodies appearing in it have been actually isolated.

$$\begin{aligned} CO + H_2O &\rightarrow H.COOH \\ H.COOH &\rightarrow CO_2 + H_2 \\ H_2 + O_2 &\rightarrow H_2O_2 \\ H_2O_2 &\rightarrow H_2O + \tfrac{1}{2}O_2 \end{aligned}$$

When such an apparently simple process proves to be so complex we may well wonder as to what the steps may be in the biological oxidation of such a substance as glucose.

From the above example we may illustrate the principle of Prof. Hopkins's lecture. Firstly, free oxygen is not necessary, the oxygen contained in the water molecule being able to take its place. Water, as is well known, exists in an ionised form—namely, H.OH. If the oxygen is to be given up, something must absorb or take up the hydrogen—viz., a hydrogen acceptor, the substance oxidised being regarded as an oxygen acceptor. As it is very difficult chemically to break up the OH group, there must be some substance, a catalyst, which enables this to be done. Such a body, facilitating the transport of oxygen or CO_2, would be essential to life. Hitherto nebulous bodies called oxidases and peroxidases have been credited with this feat, but thanks to the work of Prof. Hopkins, an exact chemical composition can now be assigned to at least one of them—viz., glutathione. This substance is capable of acting in a catalytic manner, and carrying separate O and H atoms ready for use. The importance of this step in knowledge is very great, since it reclaims the oxidases from the kingdom of bodies of "unknown constitution." By means of this compound, unsaturated fats can be rapidly oxidised at

body temperature. The busy practitioner may ask, How much better off are we for knowing these facts; what application have they to disease and its treatment? It is no exaggeration to say that an entirely new field of treatment can be seen in the near future, and the following example will bring home the importance of the new observations. Let us consider what is loosely included under the term acidosis, a common and serious enough condition to warrant the practitioner's close attention. Leaving out controversial points, we are justified in saying that the common clinical form of acidosis, whether a result of delayed chloroform poisoning, toxæmia of pregnancy, or diabetes, is a ketosis—that is to say, it is due to the presence of certain fatty acids. In normal metabolism the complicated fatty acids, such as stearic and palmitic acids, are desaturated and carbon atoms are oxidised away, two at each step, until the compound is reduced from 18 carbon atoms to 2 or 3, which in their turn disappear in the form of CO_2 and water. In acidosis, however, the oxidative processes are deficient, with the result that the degradation stops at the 4-carbon-atom stage. Derivatives of butyric acid, such as β-oxy-butyric acid and aceto-acetic acid, circulate and produce the symptoms of acidosis. Now, the degradation of these fatty acids is accomplished by desaturation and oxidation, both oxidative processes, and presumably both dependent on some body such as glutathione.

It is not going too far to suggest that acidosis in the future will be controlled clinically by the administration of some such substance, and in any case investigations on Prof. Hopkins's lines are bound to throw light on the treatment of this condition. The inborn errors of metabolism afford further examples. Research on oxidative catalysts may cure cystinuria, which is merely an expression of lack of oxidation. Prof. Hopkins could have chosen no more topical subject for his lecture, quite apart from the fact that it is to his particular interest and personal work in this branch of medicine that our progress has been largely due.

CHINA'S LEGITIMATE DRUG NEEDS.

THE proceedings of the League of Nations Opium Committee at Geneva during the past weeks and their attempt to find out the world's medical requirements of morphia and cocaine give importance to a pamphlet just issued by the International Anti-Opium Association of Peking, in which the secretary of the Association, Dr. W. H. Graham Aspland, makes an attempt to formulate an estimate of the yearly amount of narcotic drugs required for medical use in China. Dr. Aspland, who was for many years professor of obstetrics at Peking University Medical School and president of the North China Medical Association, recognises the extreme difficulty of getting accurate data, and his own figures are based upon calculations made from details supplied mainly from the mission hospitals and dispensaries, of which there are 709 in China, employing 657 foreign and Chinese doctors, and treating annually about 1,400,000 patients. Replies to his questionnaire were received from hospitals and dispensaries representing a yearly treatment of 850,000 patients. The sickness incidence of China was calculated at 5 per cent. "It may be higher but it certainly cannot be lower," says Dr. Aspland. "In European countries it is considerably lower and in U.S.A. only 2 to 2·5 per cent. Now if we may work on this hypothesis, then China, with 400,000,000 people, ought to have a sickness incidence of 20,000,000 yearly, and presuming that all these sick people were under treatment by qualified doctors either in homes, hospitals, or dispensaries, then according to our estimate of 15 g. per thousand patients based on the statistics already dealt with, a total of 300,000 g. or 10,000 oz. of morphia and narcotics would be required." However, in reporting to the League of Nations Dr. Aspland says that it was thought advisable to double this amount in order to cover all contingencies, for with an increasing medical profession more narcotics would be scientifically used. A moderate estimate of the present illicit traffic in drugs cannot be less than 30 times that of the suggested medical requirements on the generous basis outlined. As regards cocaine, Dr. Aspland's estimate of the total yearly requirements for China is 2000 oz. "It is not proposed to leave any margin, for except in the hands of qualified doctors there cannot be other than addictive use."

In a supplementary letter which we have seen Dr. Aspland gives some figures regarding the seizures in the Customs during 1922. The amount taken at Shanghai, Tientsin, Peking, and Shansi amounted to 80,000 oz. The seizures of narcotics in the Shanghai Customs for the quarter ending March, 1923, alone show over 3000 oz. originally manufactured in Germany, 464 oz. from London, and 176 oz. from France. This does not, of course, imply that the drug in the first instance was not perfectly justifiably sold under licence to a purchaser, who subsequently dealt in it in an illicit manner.

SELECTION OF OPERATION FOR GLAUCOMA.

THE operative treatment of glaucoma has for many years been debatable ground for ophthalmic surgeons. The object of all operations is to provide a freer exit for the intra-ocular fluid and so bring down the intra-ocular tension. The classical operation of iridectomy attempts to do this by opening up the angle of the anterior chamber and so providing an easier access to the lymph channel known as Schlemm's canal, which lies near the junction of cornea and sclerotic. It was very soon recognised, however, that only in acute cases and in those chronic cases where the angle of the anterior chamber was not much altered by the growth of fibrous tissue, was this operation very successful, and, further, it was noticed that in many cases where the operation was faultily performed from the surgical point of view, leaving a tag of iris entangled in the scar, the result in stopping the glaucomatous process was far better than in other cases where no fault could be found with the surgical technique. The reason was found to be that in the operation where the iris was entangled the scar became permeable, and the drainage, which was insufficient through Schlemm's canal, was supplemented by drainage into the subconjunctival space. Unfortunately, this method of obtaining drainage—by unprotected iris prolapse—was by no means a safe one, for it afforded a possible channel for septic infection and was even sometimes followed by sympathetic irido-cyclitis. Hence it has come about that many minds have been turned to the problem of how to afford a safe passage for the intra-ocular fluid into the subconjunctival space. The earliest attempt was a simple incision through the sclera, an operation which had its vogue for many years, but the scar that follows is in most cases only temporarily permeable, and this operation is now seldom performed. Colonel H. Herbert was one of the pioneers of more efficient procedures, and in a recently published volume[1] he describes two of his earlier methods, each of which is still practised by some of his followers. These are the "wedge isolation" operation and the "small-flap sclerotomy"; the latter was very popular a few years ago and is still almost exclusively practised by some surgeons. Colonel Herbert himself, however, has made what he considers an important advance by his present operation, in which a tag of iris is deliberately included in a scleral scar, the whole operation being performed subconjunctivally. This operation has now been advocated by him for a good many years and has brought him into sharp conflict with the advocates of the more generally performed operation devised by Colonel R. H. Elliot, sclero-corneal trephining. "Deliberate iris-inclusion," he says, "has never made the least headway in this country; it has hardly made a

[1] The Operative Treatment of Glaucoma. By H. Herbert, F.R.C.S. Eng., Lieut.-Colonel, Indian Medical Service (retd.): Consulting Surgeon to the Nottingham and Midland Eye Infirmary, &c. London: Baillière, Tindall, and Cox. 1923. Pp. 152. 10s. 6d.

beginning. This is due to a series of misapprehensions." To dispel these misapprehensions is the main object of his book. The fact that an unprotected prolapse of the iris is dangerous is, in his view, no argument that a protected one is so. There is no doubt, he says, that this question of effective conjunctival covering is the main one. That early infective danger is a grave objection he admits, but only in the absence of the necessary precautionary measures. On the other hand, this form of treatment is definitely put forward as the most promising means of abolishing late infection in the higher-grade glaucomas. It is true that a certain number of surgeons of late years have abandoned the operation of trephining on this very ground of the danger of late infection. It will be enough here to indicate that arguments in favour of a rival procedure can be found in this book. In Colonel Herbert's view a conjunctival fistula such as is provided by the trephining operation is dangerous if it causes a localised conjunctival bleb over the trephine hole. In his own operation his aim is to avoid all trace of conjunctival vesiculation. Colonel Herbert's operation has already given rise to a good deal of debate and is not likely to be generally adopted without further controversy. It is at any rate a gain that his views should be made easily accessible to all who desire either to test or to criticise their soundness.

RINDERPEST IN INDIA.

CATTLE plague has frequently decimated herds in India to the extent of 40 per cent. Mr. W. A. Pool and Mr. T. M. Doyle, veterinary surgeons, of the Imperial Bacteriological Laboratory, Muktesar, have been studying means of prevention; for over 20 years the method of inoculation with serum alone has been used, answering its purpose fairly well, but falling far short of real efficiency, and these investigators have been testing the efficacy of what is known as the "serum simultaneous" method, which consists of subcutaneous injection of a small amount of virulent cattle plague blood on one side of the animal and on the other a suitable dose of anti-serum. Over 450,000 cattle have been inoculated by this method, and the mortality-rate from all causes has only been 0·98 per cent. It has been found that cattle were immune for long periods, up to a year and even six years after inoculation. The economic aspect of outbreaks of rinderpest is serious; abortions and deaths of cows arise, and the losses of milk-supply and dislocation of agricultural operations at critical seasons are considerable. In India methods for the control of disease must be made as popular as possible, especially where cattle are concerned. In reporting their work Mr. Pool and Mr. Doyle consider[1] that sufficient experience has now been gained to warrant a start with the simultaneous method on a small scale in each province, and suggest that compensation should be paid to the owners of animals that die as a result of the inoculation.

MULTIPLE PEPTIC ULCERS.

IN a paper read before the annual meeting of the Radiological Society of North America Dr. Miller M. Portis and Dr. Sidney A. Portis,[2] of Chicago, who report two illustrative cases, state that before the introduction of X rays the diagnosis of more than one peptic ulcer occurring at the same time was made only in the operation room or in the dead-house, whereas at present this diagnosis can be made with accuracy before operation. The following statistics given by various pathologists and clinicians are quoted, relating to the frequency of multiple peptic ulcers. Rokitansky found that among his 79 cases of gastric ulcer no fewer than 17, or about 20 per cent., showed two or more open ulcers post mortem. In a series of 638 cases of gastric ulcer at the Mayo Clinic 28, or 4½ per cent., had more than one ulcer present. Fenwick, in an analysis of 867 post-mortem records of gastric ulcer, found that one ulcer was present in 80·5 per cent., two in 12·1 per cent., three in 3·1 per cent., and four or more in 4·2 per cent. According to Fenwick, chronic gastric ulcer is multiple in 13 per cent. of all cases, while acute ulcer is multiple in 50 per cent. On the other hand, Goldschmid, in a review of 1300 autopsies at Frankfort, among which there were 25 gastric and 21 duodenal ulcers, did not observe a single case with more than one ulcer present. In rare instances an excessive number of gastric ulcers is found—e.g., 60 (Hewitt), 34 (Osler)—or they may even be too numerous to count (Lange). Such cases are usually associated with septic infection or secondary syphilis. Duodenal ulcer, though usually solitary like gastric ulcer, may be multiple. Carman reported that among 139 cases of gastric ulcer, and 490 of duodenal ulcer, operated on in the Mayo Clinic in 1916 an ulcer was found both in the duodenum and stomach in 16 instances. The histology of multiple peptic ulcers resembles that of the single gastric or duodenal ulcer. The first of the two cases reported by the present writers occurred in a woman aged 54, who had been suffering from gastric trouble for years, with acute symptoms of eight weeks' duration. X rays showed two penetrating ulcers in the lesser curvature, and their presence was confirmed at the operation, when they were resected and the stomach anastomosed to the jejunum. The gall-bladder, which was full of stones, was removed at the same time. The patient made a good recovery. In the second case, which occurred in a woman aged 43, the X rays showed two ulcers on the lesser curvature and some deformity of the duodenal bulb. Posterior followed by anterior gastro-enterostomy was performed with some relief of the symptoms.

ATTACKS ON ALIENISTS BY THE INSANE.

ON March 6th last Dr. K. O. Olander, the distinguished Swedish alienist, was assassinated outside his house in Stockholm by an insane patient, who emptied his revolver into Dr. Olander's chest, killing him instantly. Taken by itself, this incident was not particularly extraordinary, and it was certainly not unique. As Prof. Laehr has shown in his work "Gedenktage der Psychiatrie," the toll taken by the insane from the medical profession runs into hundreds, and the risk of assassination taken by the medical profession in general, and alienists in particular, is one with which every educated person is familiar. But there were certain attendant circumstances in the case of Dr. Olander's assassination which merit comment. Some years ago Dr. Olander and a colleague were requested to investigate the mental state of a banker who had accused two banks of nefarious actions, and who was a notoriously refractory and dangerous person. Dr. Olander and his colleague, Dr. Bilström, were concealed in a room in which this patient and another banker had a conversation, and on the strength of what the alienists heard the suspect banker was certified as insane. It transpired that he carried a loaded revolver, and that it would have been impossible to investigate his mental condition by more direct methods. The procedure adopted in this case was, however, censured by the medical authorities, and, most unfortunately, this censure was published in the lay press a few days before Dr. Olander's assassination. The inquiry which followed it showed that the murderer had read this censure. Naturally these circumstances have raised a storm of protest from the Swedish medical profession, and the fact that the official censure of Dr. Olander's action was not intended by the medical authorities for publication in the lay press has only partially exonerated them from blame. Dr. Olander's many medical friends are collecting a fund, the proceeds of which will first be devoted to the education of his two children and will later be devoted to some permanent memorial. So much for the more or less personal aspect of this case. It has, however,

[1] Memoirs of the Department of Agriculture in India: Studies in Rinderpest. By W. A. Pool and T. M. Doyle, Agricultural Research Institute, Pusa.

[2] Journal of Radiology, May, 1923.

much more than a personal interest, and in Sweden, at any rate, it is likely to lead to far-reaching reforms with regard to lunacy legislation. It is obvious that alienists need more protection than they have hitherto been given; theirs is already a peculiarly difficult task, they are threatened on one side by irresponsible lunatics, and on the other side by bureaucratic authorities whose sense of responsibility to the insane and the letter of the law is apt to expose alienists to unnecessary risks. This case is also a sad example of the mischief the public press can make when it gives publicity to a subject that should either be ignored entirely or handled with great discretion.

SPONTANEOUS PNEUMOTHORAX IN PULMONARY TUBERCULOSIS.

EXTENSIVE or complete spontaneous pneumothorax is so dramatic, and usually so serious a complication in pulmonary tuberculosis, that its occurrence is at once recognised, while its grave effect upon the course of the disease is well known. On the other hand, in certain cases, a spontaneous escape of air into the pleural space may be the first indication of the presence of the disease, and provided that no infection of the pleura results and that the perforation of the pleural membrane closes quickly, recovery may be rapid and complete. It is well recognised that partial pneumothorax, of a degree sufficient to be apparent on X ray examination, yet giving only equivocal physical signs, may occur; but this pathological incident is usually regarded as uncommon. A monograph[1] by Dr. Nathan Barlow and Dr. James C. Thompson, which has lately been published under the ægis of the United States Public Health Service, sheds new light on the matter. The authors' chief thesis is that small pneumothoraces are so common that almost every patient suffering from pulmonary tuberculosis develops them sooner or later, and that they modify or even completely change the physical and X ray signs, the clinical symptoms, and the course of the disease. For the past two years Dr. Barlow has been engaged solely in the examination of physical signs, while Dr. Thompson has been chiefly occupied in reading and recording chest skiagrams. When there were discrepancies between the clinical and X ray findings, the patients and the skiagrams were confronted with each other, and a combined effort was made to find the cause of the conflicting interpretations. This work was carried out in an army hospital at New Haven, Conn., and in a series of 1000 patients there were 525 suffering from tuberculosis, and 475 from chronic non-tuberculous pulmonary disease which, in most cases, represented the relics of poison gas and influenza. Among the 525 cases of tuberculosis there were 189, or 36 per cent., in whom no small pneumothorax could be found; among the remainder from one to six small pneumothoraces were demonstrable in each case. Among the cases in which the tuberculosis was active and progressive, 75 per cent. showed one or more small pneumothoraces. In 25 cases necropsies were performed and opportunities afforded for observing the changes associated with previously demonstrated localised pneumothorax. Not only the number of these small pneumothoraces, but also their behaviour, is amazing. They come and go with extraordinary rapidity, and after complete closure of the opening in the lung "the absorption of the air in small pneumothoraces is a matter of hours only." Any small pneumothorax will disappear in less than six weeks after the underlying tissue has healed to a sufficient degree to withstand the negative pressure of the pleural cavity.

In the chapter on X ray appearances it is pointed out that by the usual technique for examination of the lungs, the perception of a small pneumothorax is usually impossible. The authors take two stereoscopic plates with different times of exposure. When fused in the stereoscope, the dark plate predominates in the picture and gives penetration and contrast. The light plate carries the detail to the pleura in the central part and nearly to the pleura in the lateral part if the lung is normal. The principal X ray signs indicative of a localised pneumothorax are the following: (1) Compressed or collapsed lung tissue; (2) areas of rarefaction; (3) pleural cusps; (4) deviation of neighbouring or distant structures; (5) deviation of the trachea, mediastinum, heart, or diaphragm; (6) atypical position of densities, course of bronchi or distribution of fibrosis; (7) annular shadows; and (8) localised fluid levels evidently not in cavities. It appears that these signs, with the exception of the localised fluid level and certain kinds of annular shadow, are more frequently due to localised pneumothorax than to any other cause. They are often conspicuous, and, if not understood, may lead to diagnostic mistakes. Suddenly unexplained improvement in a case of pulmonary tuberculosis—the false recovery of Laennec—is, in the authors' opinion, usually due to a localised pneumothorax favourably influencing a considerable part of the diseased lung. As a rule, a localised pneumothorax has a favourable effect, at least for some time. But it is indicative of active disease, and it is dangerous because it lulls the patient and his physician into a false sense of security. The authors make the following bold claim which is based on a study of readmission cases due to relapse of the disease:—

> "As we have just shown, 16 per cent. of all admissions were readmissions for relapse, 80 per cent. of whom have had more or less effective collapse of the entire lesion. It can readily be seen that it is probable that the great majority of patients who are discharged with pulmonary lesions which are apparently inactive because collapsed by localised pneumothoraces will relapse, and that the retention of such patients under treatment will prevent about 80 per cent. of the relapses which occur within the first year after discharge. . . ."

An inevitable corollary to these views is the advice that no patient with a localised pneumothorax should be discharged from an institution. The interesting calculation is made that, in general, a localised pneumothorax can permit partial collapse of from four to eight times its own bulk of lung tissue. The authors conclude with a short note on the induction of a partial pneumothorax as a therapeutic measure. They regard as a most important contra-indication to treatment with complete artificial pneumothorax the almost entire suppression of signs of moisture on the other side by one or more small pneumothoraces.

This brief résumé of the work of Dr. Barlow and Dr. Thompson will be enough to stimulate the interest of all concerned in the treatment of tuberculosis. Within the 260 pages of the bulletin the authors marshal a host of cogent arguments in favour of their views.

[1] Bulletin Nr. 132, Government Printing Office, Washington.

STREPTOCOCCI IN STRANGLES.

THE problem of streptococcus classification is not only one of perennial interest from the purely systematic point of view but also one of much importance practically, since it bears profoundly upon the possibilities and technique of specific therapy in streptococcal infections. In general, the many schemes of classification which have been propounded have shown that it is usually possible to place a strain of the organism in one or other of the existing groups when its characters are examined soon after isolation. Certain of these groups are better defined than others, and the organisms comprising them have characters of a more permanent kind; such, for example, is the enterococcus group.[1] The significance and value of many of the other proposed groups are doubtful. The general theory of streptococcal infections appearing as such widely different clinical types is that the lesion resulting from an infection is dependent both upon the site of infection and the particular grade of virulence with which the streptococcus in question is endowed. If we had means of

[1] J. H. Dible: The Enterococcus and the Streptococcus Fæcalis, Journal of Path. and Bact., 1921, vol. xxiv.

recognising such subtle differences in virulence we might easily solve the problem, but these are lacking, and research has not yet demonstrated with any constancy the presence of more easily examined associated properties which would serve as well. It is of interest, therefore, to find a claim put forward by MM. Brocq-Rousseu, Forgeot, and A. Urbain[2] to have differentiated the streptococcus of a specific type of infection—strangles in horses—from morphologically similar strains met with in man and in other animal diseases. This they claim to have done by complement-fixation tests; a method which has so far failed to advance the general problem of the classification of the human-infesting strains. In a former paper their results show a constant fixation of complement by streptococci from strangles in the presence of what is presumably a polyvalent serum; streptococci from other animal sources, and from the human subject, gave negative results. In a more recent paper,[3] the same investigators have pursued the subject by inquiring if these characters, which distinguish the streptococcus of strangles, are constant, or if, resultant upon changes in environment, they may become modified or lost. Besredka holds that by animal passage a streptococcus loses its identity and, becoming adapted to the animal body upon which the passage is made, acquires a new individuality. The experiments in this direction show this to be the case with the organisms for strangles, so that after a certain number of passages, be it upon mice, guinea-pigs, or rabbits, the ability to fix complement in the presence of the specific serum is lost. It is always possible in such cases that the original strain has become replaced by one proper to the animal experimented upon—a fallacy to be borne in mind in such work—but in this case the fixative power shows a gradual extinction, suggestive of a progressive modification of the organism in question. On the other hand, on ordinary culture-media the original characters of the organisms are preserved. These results are of considerable interest in their bearing upon the general problems of the streptococcus in the human subject.

MANCHESTER RADIUM INSTITUTE.

THE report on the work of the Manchester and District Radium Institute for the year 1922, by Dr. Arthur Burrows, contains the record of the first completed year in the new building. Just short of 800 cases presented themselves for treatment, while the full capacity of the emanation plant was utilised, more than 500 emanation plates and 1250 emanation tubes being made during the year. Forty-one out of 85 cases of rodent ulcer treated were apparently cured. Exclusive of rodent ulcer, 59 cases of malignant disease, out of a total of 584, were rendered free from signs and symptoms of disease, thus maintaining the "usual average" of slightly over 10 per cent. of perfect immediate results following upon radium treatment. The types of carcinoma in which treatment is most gratifying are those affecting the cervix uteri and the mouth. The conclusion is reached in the report that dense fibrosis has no great influence on the specific gravity of tumours and therefore exerts little, if any, screening effect. Improvements have been made during the year in the arrangement for protecting the workers in the Institute, illustrations being given in the report of the various devices. A new diathermy apparatus has been installed with a view to combining its use with that of radium. Mention is made in the report of a special study by Dr. J. Holker on the physical chemistry of serum in health and disease, with special reference to the effect of alpha, beta, and gamma rays on serum. By this means it is hoped to throw light upon the general systemic effects which follow radiation and to obtain some indication of the degree of absorption of tumours undergoing ray treatment. The report, although tantalisingly brief, will be read with interest by other workers in the same field; the results already achieved more than justify the generosity of Sir Edward Holt in presenting to Manchester its admirable Radium Institute.

[2] MM. Brocq-Rousseu, Forgeot, et A. Urbain: Etudes sur le streptocoque gourmeux, Annales de l'Institut Pasteur, t. xxxvi., September, 1922. [3] Ibid., March, 1923.

SUCCESSFUL INSULIN MEDICATION.

THOSE who have not actually seen the change in a suitably chosen case of diabetes after insulin administration may hesitate to involve themselves or their patients in the mesh of expensive and elaborate biochemical tests which must accompany and control this treatment. For their comfort and encouragement we reproduce here two photographs of the same child, the interval between them being only two and a half months, before and during treatment. The first photo was taken on Dec. 7th, 1922, when the boy weighed only 15 lb., having had diabetes for two years. At this period, even with days of complete starvation, he had

Child with Diabetes Treated with Insulin.

Dec. 7th, 1922. Feb. 26th, 1923.

glycosuria unless his diet was restricted to 5 per cent. vegetables. He was first put on insulin treatment at the St. Louis Children's Hospital under the care of Dr. W. McKim Marriott; in four days the sugar in the urine fell from over 40 g. a day to nil, while the blood-sugar fell from 400 to 100 mg. per 100 c.cm. in eight days. At the time of the second photo, Feb. 26th, 1923, the weight had increased to 30 lb. and the patient was on a diet of 55 g. carbohydrate, 85 g. protein, and 100 g. fat. Two months later he weighed 32 lb. During three months of treatment it was found possible to reduce the daily dosage of insulin to 15 units. We have but briefly summarised the data given by Dr. Ralph H. Major in the *Journal of the American Medical Association* for June 2nd, where the photos are published. Dr. Major gives only a short account of the case, but the pictures speak for themselves, and form a most convincing proof of the desirability of undertaking all the work still inseparable from insulin treatment in cases judged suitable therefor.

PROGRESS IN COMBATING VENEREAL DISEASE.

IN spite of reduced resources, it is recorded in the annual report of the National Council for Combating Venereal Diseases, presented on June 13th at the annual business meeting, that the volume of propaganda has increased rather than diminished. The formation during the past year of the Union Internationale contre le Péril Vénérien, on which all national organisations for combating venereal diseases are represented, is noted as an encouraging feature. The work considered by the Union as of immediate importance is: (1) Rendering non-infective the maritime and colonial

services; (2) surveillance of emigration; (3) surveillance and concerted action along the frontiers; (4) international measures for the suppression of quackery; (5) a single moral standard for both sexes; (6) the study of the principle of legal responsibility, compulsory notification and treatment, penalties, &c. It is hoped that through the agency of this organisation adequate international machinery to secure the continuation of treatment for migrants will be adequately dealt with. Increased attention is being given in all countries to the problem of how the rising generation may be best instructed in the biological facts of life and in sex hygiene. As to the measures taken in this country, it is considered satisfactory that the fall in the number of new cases at the free treatment centres from 105,000 in 1920 to 84,000 in 1921 has continued, since in 1922 only 73,000 new cases presented themselves. There are, however, grounds for believing that a very large number of infected women are not seeking treatment. In order to help to overcome this difficulty it is suggested by the Council that infant welfare centres should provide facilities for diagnosis and that special arrangements for the treatment of patients passed on from infant welfare centres should be made at the venereal disease treatment centres. General approval is expressed by the council of the policy outlined in the report of the Trevithin Committee.

A SCHEME FOR A COUNTY PATHOLOGIST.

REPRESENTATIVES of the voluntary hospitals of the County of Dorset and of Yeovil met on June 5th at the Dorset County Hospital to discuss a scheme for the appointment of a pathologist for Dorset voluntary hospitals. The purpose of the scheme was to centralise the pathological work of the county, to provide a rapid means of obtaining reports on cases, and to enable practitioners in the county to obtain the immediate services of a pathologist and bacteriologist. The idea was for the pathologist to attend at a laboratory put at his disposal at the Dorset County Hospital, at stated hours each week-day, receiving an honorarium from the hospitals at an agreed sum *per capita* of all in-patients and at the same rate for those out-patients who required his services, and being free to take fees for private practice in consultation with practitioners. The out-of-pocket expenses of the laboratory were to be paid for by the pathologist, who was to be appointed after consultation with the professor of pathology at the University of Bristol. The scheme, as thus outlined, was unanimously approved in principle by the representatives, who undertook to present it for consideration by the various governing bodies of the hospitals, the capitation fee proposed being 2*s*. per head. Considerable doubt was expressed, however, whether the hospitals would undertake to pay such a levy. Even this sum was estimated to bring in an income of only £300 per annum, and, as Prof. Walker Hall pointed out in his letter accepting the invitation to coöperate in the nomination of the pathologist, the amount of honorarium available would be the determining factor in the type of pathologist likely to present himself for the appointment. During the first few years, however, the pathologist could not expect to obtain much from private fees, and Prof. Walker Hall suggested the deletion of the clause requiring out-of-pocket expenses to be paid for by him; Prof. Hall even foresaw the necessity of the provision of a competent laboratory assistant. Although the finance may present difficulties at the moment, we sincerely hope that any workable scheme to provide better facilities for pathological investigations in county districts will not be turned down without serious consideration. It is noticeable from reports of various voluntary hospital committees set up by request of the Voluntary Hospitals Commission to investigate conditions in the several areas, that while the large hospitals providing accessory departments such as X ray, pathological laboratories, and so forth, lack sufficient funds to carry on, the smaller hospitals, where no such facilities are provided, often have a credit balance. The remedy might be a county financial fund allocating grants of money in accordance with work done. Pooling of special departments is not easy, but a beginning might be made on the lines suggested in Dorset, and we shall watch with interest the fate of the scheme we have outlined.

HARVEIAN SOCIETY: THE ANNUAL DINNER.

THE annual dinner of the Harveian Society, held at the Connaught Rooms on June 14th, with Sir Crisp English, the President, in the chair, was a successful and pleasant function. The company of about 150 people included a number of guests distinguished in law, literature, or politics, as well as in medicine. After the loyal toasts had been honoured, Mr. G. K. Chesterton proposed the toast of the Society. As a journalist, Mr. Chesterton said, he had little reason to be proud of the methods of journalism when applied to medical or scientific subjects. The lay journalist was apt to seize upon one sentence of a scientific address or discussion shorn of its context, and from this to elaborate an article for the public with scare headlines. For instance, he could imagine that in a discussion upon baldness one expert might make use of a phrase such as "if all these conditions should operate simultaneously and unchecked, it would appear that the loss of hair would be inevitable." The last part of this sentence would form the text of a newspaper article with headlines such as "Mankind Condemned to Baldness—Science Predicts a Bald Humanity." "Science" (always "she" in the newspapers) was in this fashion made responsible for the most unwarrantable claims or unfounded assertions; "Science" was reported as having said "something" when, in fact, the statement was made by one individual who might, and often did, hold views diametrically opposed to those of the rest of his fellow scientists; an enthusiastic theory that was far in advance of established fact was often served out to the lay reader as the "latest achievement of science." In an age of advertisement, which he was convinced that past and future generations would regard with surprise, the medical profession was one of the few that retained its sanity by refusing to join in this almost universal desire for notoriety. In his reply, Sir Crisp English, after mentioning that on its ninety-second birthday the Harveian Society was in a flourishing condition, referred to the many problems that confronted the Society both as medical men and as citizens, notably those of cancer, tubercle, and housing. Sir StClair Thomson proposed the toast of the sister societies in an amusing speech and Sir William Hale-White replied. The health of the guests was proposed by Dr. Charles Buttar. In his response, Lord Montagu of Beaulieu compared the function of roads to that of arteries in the body in that any obstruction led to congestion and congestion to decay. Sir Anthony Hope Hawkins, who alluded to medical men distinguished in literature—Smollett, Conan Doyle, and Somerset Maugham—and Sir Richard Muir, who made an amusing reference to the spectacle of a great medical expert witness in the box being cross-examined by an even greater medical expert in the dock, also responded.

THE GUARDIANSHIP SOCIETY.

A STILL further increase in the work of this Society was reported at the annual meeting, held at Brighton on June 11th. The special object of the Society is the care and supervision of the mentally and physically defective by boarding them out in carefully chosen families, by assisting them to obtain training and employment suited to their capabilities, and by visiting them and taking a friendly interest in their moral and material welfare. This type of work is done by no other society in the country. The annual report shows that the number of fresh applications during the year was 317 against 284 in the previous year, but the number of fresh cases actually taken was 156 against 163. The total number of patients cared for was 386, and the number remaining at the end

of the year was 243, against 371 and 231 respectively. Seventy-four of the cases had been certified cases—71 under the Mental Deficiency Act, and three under the Lunacy Act. There had also been 58 cases under supervision in their own homes for the Brighton Corporation. Cases had been received from 53 public bodies, 24 societies, hospitals, &c., and 57 from private sources. The scope of the industrial class has lately been increased; this class is now held daily and a special teacher has been engaged. Dr. Duncan Forbes, medical officer of health for Brighton, expresses the hope (see p. 1286) that a grant will be forthcoming for this educational work. In addition arrangements are in progress for a class to be held twice weekly for boot-repairing. The report goes on to say that the question of starting a hostel for feeble-minded boys, where they could go out to daily work under supervision and help to support themselves, had been raised, but such a scheme needed much consideration. A trained nurse has been appointed to visit patients in Brighton, and another such visitor is needed to help in the country, where patients were so scattered. The statement of accounts showed receipts amounting to £8633 8*s.* 8*d.*, of which all had been spent excepting £1 15*s.* The report and accounts were passed, after which a large committee was elected, the coöpted members comprising representatives of the Brighton Corporation Mental Deficiency Act Committee, the Hastings Corporation Tubercular Care Committee, the London County Council, and the Brighton Education Committee and Board of Guardians. An address on the Guardianship and Its Aims was given by Dr. Helen Boyle. She said that people of this country appeared to have been rather obsessed with the idea that if they had good buildings and good food for their afflicted children they had all that was necessary. They did not realise that what was most important was home care; Miss Woodhead, who was a pioneer in that movement, had realised the need. Children were sent by boards of guardians all over the country and it seemed rather absurd they should have to come to Brighton when the homes they required could, of course, be found much nearer. A great many homes got so fond of the poor little creatures boarded-out in them that even if the money was not always forthcoming they were still content to carry on. While they might get love, devotion, and self-sacrifice in institutions, said Dr. Boyle, it was impossible for a matron to bestow the same affection upon 30 children as a mother could bestow upon three or four. Apart from the friendly supervision over these less gifted creatures, the Society did everything possible to find suitable occupations for them, and it was hoped that a grant would be secured for the occupation centre which had been started, and that it would enjoy the support such centres received in other parts of the country. Dr. Boyle's address and one by Dr. Francis H. Edwards on Mind and Matter were greatly appreciated by those present.

AN important debate on the Surgery of the Hepatic and Common Bile-ducts will be opened by Dr. William Mayo, of Rochester (Minnesota), at the Surgical Section of the Royal Society of Medicine, on Wednesday, June 27th, at 5.30 P.M. Sir Berkeley Moynihan, Mr. James Sherren, Mr. Grey Turner, and Mr. A. J. Walton will take part in the discussion, each dealing with a particular aspect of the subject. A large exhibition of specimens illustrating the pathology and surgery of the bile-ducts, kindly loaned by various metropolitan museums and arranged by Mr. James Berry, President of the Section, will be on view in the lecture-room during the afternoon.

ROYAL COLLEGE OF SURGEONS IN IRELAND.—On Monday, June 25th, at 7.30 P.M., the Honorary Fellowship of the College will be conferred on Sir Harold Stiles, Regius Professor of Clinical Surgery in the University of Edinburgh. The Charter Day dinner will be held in the College Hall immediately after the ceremony.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

XXV.—THE PROPHYLACTIC TREATMENT OF PUERPERAL SEPSIS.

CERTAIN facts as to how puerperal sepsis arises are well known: (1) There are undoubted cases of auto-infection arising from a pre-existing focus of sepsis in the mother herself, which is roused to renewed activity immediately after delivery, when the puerperal woman apparently passes from a condition of comparative immunity to one of special susceptibility. (2) It may, however, and probably most often does, arise by introduction of pathogenic germs by the accoucheur, either through error in the technique of sterilisation of his own person or by introduction of germs from the vulva, perineum, or anus of the mother when making examinations. (3) Infection may be introduced into the genital canal of the puerperal woman, especially when lacerations are present, through carelessness in nursing, through infection by the hands of the patient herself, or by intercourse taking place in the early days of the puerperium.

Such "accidents" will only be abolished by the adoption in midwifery of routine methods which are easily available, can be used quickly and safely by a busy practitioner whose days are full of other responsibilities besides midwifery, and become a habit which it is easier to follow than to break.

Auto-infection.

Auto-infection can only be prevented by careful examination during pregnancy, with treatment of septic conditions, such as:—

(*a*) *Oral sepsis* has very real import for midwifery. Even alveolar abscess and infection of sinuses are occasionally found in pregnant women who make no complaint till questioned; pyorrhœa and septic throats are not uncommon. Dental clinics for expectant mothers should help the practitioner to secure clean dental conditions for poor patients, and private dentists are available for others. The superstition that dental interference should be postponed until after delivery must be fought.

(*b*) *Staphylococcal infections*, such as whitlows, sores on the head or elsewhere, boils, &c., if present, should be dealt with before labour sets in. When generalised sepsis, such as recurring boils, is present, injections of collosol manganese into the muscles of the buttock give good results.

(*c*) *Vaginal discharge* is important, and must not be overlooked; it usually comes from a chronic endocervicitis, which may be due to the gonococcus or to other organisms. In any case, the cervix should be rendered aseptic during pregnancy, for a discharge may not only infect the child's eyes at birth if gonorrhœal in origin, but is a possible source of infection of the placental site after delivery. When vaginal discharge is present the appendages should also be examined, for chronic salpingo-oöphoritis still further increases the risk of puerperal fever. Incidentally, when chronic tubal trouble is lighted up after delivery the rise in temperature is more likely to occur seven than three days after delivery.

Allied to that of auto-infection is the question of the general resistance of the patient; lowered resistance may be present without obvious sepsis, and should none the less be treated. Healthy women feel a greater sense of vitality during pregnancy than at other times. If pregnancy seems a burden to a woman her general health and nutrition need attention before the strain of labour comes.

Sepsis during Labour.

Ante-natal Examination.—The avoidance of sepsis introduced at the time of labour is to some extent dependent on efficient examination during pregnancy, in order to ascertain if the size of pelvis and child

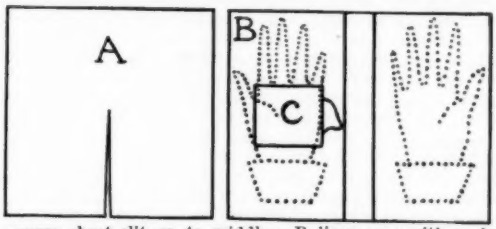
are normal in relation to each other. Attempts are sometimes made to deliver a large child through a small pelvis, involving a severe and damaging operative delivery, when such risks might have been avoided by induction of labour a few weeks earlier. Labour in which manipulative interference and damage to tissues play a part must obviously be more often associated with the introduction of pathogenic bacteria than normal delivery, and with greater antenatal care such labours should become more rare.

Assistance Available during Labour.—This has a practical influence on aseptic results. Practitioners should work in coöperation with a trained nurse-midwife and an anæsthetist. The nurse must be specially trained in abdominal examination and diagnosis, and in methods of strict asepsis. *The anæsthetist should be available for the whole of the second stage.* The nurse will prepare the patient at the beginning of labour, and if there is any doubt whether the case is normal or if the patient is a primipara the practitioner should be summoned; many complications are avoided by seeing a primipara at the beginning of labour, and at least ascertaining by abdominal examination that the child's head has descended into the pelvis. Preparation by the nurse will include the emptying of the lower bowel by enemata, after which the posterior part of the vulva and round the anus should be shaved. The vaginal orifice and perineum and surrounding parts of the skin should be thoroughly washed with warm water and ether soap, and the whole area is painted when dry with iodine solution, after which a sterile sanitary pad or towel should be applied. In primiparæ the repeated application to the perineum during labour of warm sterile pads soaked in lysol (1 in 320) will serve the double purpose of relaxing the perineum and disinfecting the surface.

The Second Stage.—When the second stage begins, which the midwife will recognise by the rupture of membranes and alteration in the character of the pains, the patient should be relieved by cholorform, a few drops being given on an open gauze mask just before each pain. The time may be recognised either by the quickening of the pulse or the gradual hardening of the uterus, and even a few drops given immediately either sign appears relieve the distressing character of the pain. The patient can still use her voluntary muscles to bear down during a pain, and can sleep quietly between the pains, with lessened nervous tension and exhaustion. The patient should be able to talk coherently when awake, until the head is on the perineum, when she is gradually allowed to become more unconscious. If not needed before, the accoucheur will be summoned when delivery approaches. The patient should be anæsthetised to full surgical anæsthesia at the moment of delivery of the head, after which no more anæsthetic need be given unless stitches are required. Anæsthetics during labour not only relieve the patient from immediate pain and subsequent exhaustion, but ensures a relaxation of the muscles of the pelvic floor during the passage of the head; thus lacerations, which predispose to sepsis, may be avoided, and also intrinsic damage to the muscles and fasciæ with subsequent prolapse of organs.

Sterilisation of Outfit.—A quick effective method for ensuring sterile conditions is of great importance to the busy practitioner. A tin of sterilised necessaries is essential. It should contain gown, headpiece, and gloves; a square of gamgee tissue to go under the patient as she lies in the left lateral position; a square sheet slit up the middle half way; towels, swabs, a roll of gauze, sanitary pads, binder, thread and dressings for the cord. The slit sheet (A) is easily prepared and is used to cover the patient and keep the area of operations aseptic. The top of the slit lies at the anal cleft, the upper part of the divided portion covers the right thigh and the lower half passes over the median surface of the left thigh. The undivided part of the sheet covers the body of the patient and her coverings and enables a sterile hand to pass over it to the abdomen without fear of contamination. A sterile towel below completes the aseptic area.

The easy aseptic adjustment of gloves is most important. For sterilisation each pair should be placed in a special linen case (B) after being powdered inside and out and the cuff folded back so that only the inside of the glove is touched when they are put on. A towel to dry the hands before putting on the gloves should be placed between each glove case. The linen case has two pockets, one for each glove, with a small pocket for a bag of powder for the fingers. The case can be opened on a table, the fingers powdered and each glove drawn on in a few



A, square sheet slit up to middle; B, linen case, with pockets for gloves; C, small pocket for powder.

seconds. After washing the accoucheur can slip on gown, head-piece, and gloves in a minute or two; the area of the patient with which he comes in contact has already been rendered aseptic by the nurse. After the birth of the child careful examination of the perineum and inner aspect of the vaginal orifice will enable the accoucheur to recognise and repair any tears and hence to leave no open wound in a neighbourhood very liable to sepsis.

The Third Stage.—The conduct of this stage should not be hurried. If after the child is born the uterus is allowed to rest without undue anxious stimulation, the placenta is more likely to be expelled naturally by an effective pain. Manual removal of a so-called adherent placenta should be avoided unless dangerous hæmorrhage renders it essential. It involves a greater risk of puerperal sepsis than any other manipulation in midwifery.

The Puerperium.—The prevention of sepsis in the early days of the puerperium depends on the nurse. Irrigation of the perineum, which is dried by sterile gauze, is better than swabbing. The aseptic care of the breasts requires a sterilised box such as a good-sized cigarette box for each patient. It should contain a pile of gauze squares and cubes of wool packed. If given boric lotion the patient can herself swab the nipples with wool and dry them with gauze before and after each feed. Breasts thus cared for will not develop septic conditions. The patient must be guarded during the first week from the introduction of infections through visitors.

Sundry Points.—In every district, if aseptic midwifery is to be carried on, a central sterilising station, public or private, should be available for the supply of sterilised midwifery tins, dressing tins, with such other requirements—e.g., for the breasts—as practitioners may need. The services of an anæsthetist for midwifery ought not to be considered a luxury but a necessity, to be paid by public funds if necessary.

The conduct of normal labour only has here been discussed. It is desirable that operative midwifery should be conducted in a properly equipped labour ward or theatre. Practically, however, many operative procedures have to be done in the bedroom. All the more essential then is the provision of an ample supply of sterile towels, &c., and extra gloves. Instruments after boiling should either remain in the steriliser, or be placed on a dish previously rinsed in strong lysol and covered by a sterile towel. Before any delivery vaginal retractors, large-toothed vulsellæ, a few Spencer Wells forceps, dissecting forceps, needles, silkworm gut and needle holders, and also sterile catgut should be boiled ready for use though they may not be required.

FLORENCE E. BARRETT, C.B.E., M.D., M.S.Lond.,
Consulting Obstetric and Gynæcological Surgeon,
Royal Free Hospital.

Special Articles.

BRITISH MEDICAL ASSOCIATION:
ANNUAL MEETING AT PORTSMOUTH.

PROVISIONAL PROGRAMME.

THE ninety-first annual meeting of the British Medical Association will be held at Portsmouth from July 24th–27th, under the presidency of Mr. Charles P. Childe. The Association last met at Portsmouth in 1899, under the presidency of the late Dr. J. Ward Cousins. The annual meeting will be preceded by the annual meeting of the Representative Body, which will be opened at 10 A.M. on Friday, July 20th, with Dr. R. Wallace Henry in the chair. The statutory annual general meeting will be held at 2 P.M. on Tuesday, July 24th. The President will deliver his address on that evening, and the adjourned general meeting will be held at 7.45 P.M. The annual dinner of the Association will take place in the Town Hall on Thursday, July 26th, at 7.30 P.M. The annual exhibition of surgical appliances, food, drugs, and books will be open from July 25th–27th.

The scientific part of the meeting will divide, as usual, into a number of sections meeting from 9.45 A.M. to 12.45 P.M. for papers and discussions; laboratory and clinical demonstrations in connexion with the work of the sections will be given in the afternoons.

The following sections each meet on three days—Wednesday, Thursday, and Friday, July 25th, 26th, and 27th.

Medicine.

President: Sir Thomas J. Horder. Vice-Presidents: Drs. George A. Allan, J. J. Perkins, John Phillips, C. F. Routh, J. Odery Symes. Hon. Secretaries: Dr. R. A. Dove, "Chesterfield," Elm Grove, Southsea; Dr. Geoffrey Evans, 23, Park-square, London, N.W. 1.

Provisional Programme.—July 25th.—Discussion: Diabetes. To be opened by Sir Thomas Horder, followed by Drs. P. J. Cammidge, George Graham, J. A. Nixon, and John K. Rennie. Dr. F. G. Banting (Toronto), the discoverer of insulin, will also take part in the debate.

July 26th.—Discussion: The Ætiology and Treatment of Heart Disease in Early Life, with special view to the prevention of Chronic Cardiac Insufficiency. To be opened by Dr. Reginald Miller, followed by Drs. G. A. Allan, J. G. Emanuel, T. F. Cotton, Carey Coombs, Wilfrid Attlee, and M. O. Raven.

July 27th.—Discussion: Chronic Bronchitis. To be opened by Dr. J. J. Perkins, followed by Drs. J. O. Symes, E. Hyla Greves, M. G. Foster, A. C. Inman, E. L. Collis, and Mr. G. Seccombe Hett.

Surgery.

President: Sir Henry M. W. Gray. Vice-Presidents: Mr. Douglas Drew, Sir T. Crisp English, Mr. T. A. Munro Forde, Mr. John Patrick, Mr. Percy Sargent. Hon. Secretaries: Mr. Harold Burrows, The Cams, Grove-road, Southsea; Mr. B. C. Maybury, 42, Wimpole-street, W. 1.

Provisional Programme.—July 25th (10 A.M.).—Discussion: The Treatment of Obstruction of the Colon. To be opened by Mr. Arthur H. Burgess, followed by Messrs. Seymour G. Barling, Arthur B. Mitchell, Herbert W. Carson, John P. Lockhart-Mummery, and Charles A. Pannett. Discussion (12 noon): Are the Results of the Operative Treatment of Malignant Disease Improving? To be introduced by Mr. H. J. Paterson.

July 26th.—Discussion: The Treatment of Acute Primary Infections of the Hand (including sequelæ). To be opened by Mr. David P. D. Wilkie, followed by Messrs. C. Max Page, F. D. Saner, Gerald T. Mullally, and R. M. Handfield-Jones. Discussion (12 noon): Ventriculography. To be introduced by Mr. A. A. McConnell.

July 27th.—Discussion: Anæsthetics from the Surgeon's Point of View. To be opened by Mr. Wilfred Trotter, followed by Sir William de Courcy Wheeler and Drs. A. L. Flemming, J. Blomfield, and A. E. Boyd.

Obstetrics and Gynæcology.

President: Mr. Victor Bonney. Vice-Presidents: Prof. W. Blair Bell, Dr. James Hendry, Dr. Louisa Martindale, Dr. A. Bosworth Wright. Hon. Secretaries: Dr. Gertrude Dearnley, 27, Seymour House, Compton-street, London, W.C. 1; Dr. E. F. S. Green, 8, Victoria-road, Southsea.

Provisional Programme.—July 25th.—Discussion: Treatment of Acute Salpingitis. To be opened by Mr. Aleck Bourne, followed by Profs. W. Blair Bell and C. G. Lowry, Mr. L. Phillips, Drs. C. Oldfield, J. Campbell, F. Edge, Miss F. Ivens, Mr. Beckwith Whitehouse, Drs. Eardley Holland and S. Forsdike, Mr. L. Rivett and Mr. Victor Bonney.

July 26th.—Discussion: The Use and Abuse of Forceps. To be opened by Mr. Comyns Berkeley, followed by Profs. C. G. Lowry, J. A. Kynoch, and R. G. McKerron, Drs. J. Campbell, F. Edge, and C. E. Purslow, Miss F. Ivens, Dr. S. Forsdike, Mr. L. Rivett, Drs. D. McAskie, R. K. Ford, and Mr. Victor Bonney. At 3 P.M. Lieut.-Colonel A. Buchanan, I.M.S., will give a demonstration of midwifery models.

July 27th.—Papers: Prof. W. Blair Bell: Modern Views on Dysmenorrhœa; Prof. C. G. Lowry: Three Cases of Chorion-epithelioma, and One Case of Tuberculosis of the Cervix; Mr. Beckwith Whitehouse with Dr. Henry Featherstone: Certain Observations on the Innervation of the Uterus; Dr. S. Forsdike: Treatment of Uncontrollable Uterine Hæmorrhage by Radium; Mr. Lane Roberts: Syphilis in its Relation to Obstetrics; and Dr. W. R. MacKenzie: Rontgenographic Pelvimetry.

Pathology and Bacteriology.

President: Dr. Hugh Maclean. Vice-Presidents: Prof. Frederick Hobday, Dr. A. F. Bernard Shaw, Prof. G. Haswell Wilson. Hon. Secretaries: Dr. J. A. D. Radcliffe, 41, Clarendon-road, Southsea; Dr. R. L. Mackenzie Wallis, 105, Harley-street, London, W. 1.

Provisional Programme.—July 25th.—Discussion: Diseases of the Stomach, particularly with reference to Modern Methods of Investigation. To be opened by Dr. Charles Bolton.

July 26th.—The Value of Serological Tests in Diagnosis. To be opened by Prof. H. R. Dean.

July 27th.—The Part Played by Fungi in Disease. To be opened by Dr. A. Castellani.

The officers of the Section will be glad of the loan of X ray negatives or prints for exhibition in the Museum. Offers should be addressed to Dr. M. Aston Key, 14, Clarendon-road, Southsea, Portsmouth.

Neurology and Psychological Medicine.

President: Dr. Henry Devine. Vice-Presidents: Drs. D. K. Henderson, C. M. Hinds Howell, George Riddoch, E. J. Davis Taylor. Hon. Secretaries: Dr. J. L. Jackson, Knowle Mental Hospital, Fareham, Hants; Dr. C. P. Symonds, 74, Wimpole-street, London, W. 1.

Provisional Programme.—July 25th.—Discussion: The Nervous Child. To be opened by Dr. H. C. Cameron.

July 26th.—Discussion: The Sequelæ of Encephalitis Lethargica. To be opened by Dr. E. F. Buzzard. In the afternoon Dr. C. Da Fano will give a demonstration on Epidemic and Herpetic Encephalitis.

July 27th.—Discussion: The Prognosis in Psychosis occurring during Adolescence. To be opened by Dr. D. K. Henderson.

The following sections will each meet on two days:—

Ophthalmology.

President: Sir John H. Parsons. Vice-Presidents: Dr. W. S. Inman, Mr. Ransom Pickard. Hon. Secretaries: Mr. M. W. B. Oliver, 128, Harley-street, London, W. 1; Dr. J. A. Valentine, South View Lodge, 53, Kent-road, Southsea.

Provisional Programme.—July 26th.—Discussion: The Clinical Significance of Scotometry. To be opened by Mr. A. H. H. Sinclair.

July 27th.—Discussion: Ophthalmology in its Relation to the Navy, Army, and Air Force. Air Commodore D. Munro will speak, and other officers of the R.A.F. and from the Navy and Army will take part.

Public Health.

President: Dr. A. Mearns Fraser. Vice-Presidents: Dr. W. J. Howarth, Dr. L. E. W. Stephens, Prof. F. E. Wynne. Hon. Secretaries: Dr. W. H. Lamplough, Bredon, Alverstoke; Dr. E. Lewys-Lloyd, Gothic House, Towyn, Merionethshire.

July 26th.—Discussion: What Factors have contributed towards the Recent Decrease of Infantile Mortality, and are such Factors likely to be Permanent or Temporary? To be opened by Dr. James Wheatley.

Paper: Dr. H. Scurfield: The Value of Watercress as a Food, and Suggestions for its Extended Use.

July 27th.—Discussion: The Effect on Health of Sewer Air and Drain Air. To be opened by Prof. F. E. Wynne.

Paper: Dr. E. B. Hazleton: A Predisposing Cause of Tuberculosis and its Prevention.

Diseases of Children.

President: Dr. Edmund Cautley. Vice-Presidents: Drs Catherine Chisholm, William P. McEldowney, Eric Pritchard. Hon. Secretaries: Dr. E. A. Cockayne, 33, Weymouth-street

London, W. 1; Dr. R. Hamer Hodges, 93, Victoria-road, N., Southsea.

Provisional Programme.—July 26th.—Discussion: Acidosis and Alkalosis in Children. To be opened by Dr. P. J. Cammidge.

July 27th.—Discussion: Summer Diarrhœa. To be opened by Dr. David Nabarro.

Paper: Dr. H. T. Ashby: After-effects of Tuberculosis of Abdomen in Children.

Laryngology and Otology.

President: Dr. E. B. Waggett. Vice-Presidents: Messrs. Somerville Hastings, A. J. M. Wright. Hon. Secretaries: Dr. G. H. Ross, 28, Kent-road, Southsea; Mr. H. G. Bedford Russell, 86, Harley-street, London, W. 1.

This Section meets on July 26th and 27th.

Provisional Programme.—(*a*) Laryngology.—Discussion: Spasm of Larynx. To be opened by Sir StClair Thomson. (*b*) Otology.—Discussion: Non-suppurative Conditions of the Labyrinth. To be opened by Mr. Sydney R. Scott.

Radiology and Electrology.

President: Dr. S. Gilbert Scott. Vice-Presidents: Prof. Sidney Russ, Dr. W. J. Turrell. Hon. Secretaries: Dr. E. Beverley Bird, 15, Clarence Parade, Southsea; Dr. G. T. Loughborough, 9, Bentinck-street, London, W. 1.

Provisional Programme.—July 25th.—Discussion: The X Ray Examination of the Urinary Tract. To be opened by Dr. R. W. A. Salmond. Paper: Pyelography, by Dr. R. Ogier Ward.

July 26th.—Discussion: Medical Diathermy. To be opened by Dr. E. P. Cumberbatch. Supplementary paper: Dr. C. A. Robinson.

There will be an exhibition of X ray negatives and prints of the urinary tract. Prints or negatives (up to the number of ten for any name or hospital) should be sent to Dr. E. Beverley Bird, 15, Clarence Parade, Southsea, before July 10th.

Naval and Military Hygiene.

President: Surgeon Rear-Admiral Sir Percy W. Bassett-Smith. Vice-Presidents: Surgeon Captain R. St. G. S. Bond, Air Commodore David Munro, Sir Leonard Rogers, Lieut.-Colonel N. J. Crawford Rutherford. Hon. Secretaries: Surgeon Commander K. Digby Bell, R.N., Royal Naval School of Physical Training, Portsmouth; Surgeon Commander D. H. C. Given, R.N., Commander-in-Chief's Office, Portsmouth; Captain W. L. E. Fretz, R.A.M.C., Alexander Military Hospital, Cosham, Hants; Wing Commander H. E. Whittingham, R.A.F., Central Laboratory, Avenue House, East End-road, Finchley, N. 3.

Provisional Programme.—July 25th (10 A.M.).—Papers: Group Captain M. W. Flack: Some Considerations in the Estimation of Physical Efficiency; Lieut-Colonel C. R. Sylvester-Bradley: Some Aspects of Normality, with special reference to the Selection of Recruits; Surgeon Commander K. Digby Bell: Some of the Points Embodied in the Curriculum of a Student of Physical Training.—(12 noon): Wing Commander H. E. Whittingham and Flight Lieut. A. F. Rook: The Ætiology of Phlebotomus Fever.—(2.30 P.M.): Visit to Royal Naval School of Physical Training, where a demonstration and discussion will take place.

July 26th (10 A.M.).—Papers: Major M. Sinclair: Recent Changes in Fracture Treatment; Surgeon Captain D. W. Hewitt: Some General Remarks on Naval Surgery; Major H. Graeme Anderson: Aeroplane Accidents.—(2.30 P.M.): Demonstration by Major M. Sinclair of special appliances for treatment of fractures. Visit to Royal Naval Hospital, Haslar.

Tuberculosis.

President: Sir Henry J. Gauvain. Vice-Presidents: Drs. Robert Robertson, Jane Walker, R. A. Young. Hon. Secretaries: Dr. W. Young Woodburn, 75, Festing-road, Southsea; Dr. J. Browning Alexander, 143, Harley-street, London, W. 1.

Provisional Programme.—July 25th.—Discussions: (1) The Artificial Light Treatment of Lupus and other Forms of Tuberculosis. To be opened by Prof. Reyn (Copenhagen), followed by Dr. J. H. Sequeira. (2) The Present Position of the Surgical Treatment of Pulmonary Tuberculosis. To be opened by Dr. Gravesen (Vejlefjord Sanatorium).

July 26th.—Discussion: The Social Aspects of Tuberculosis, with special reference to Infectivity. To be opened by Dr. Jane Walker, followed by Dr. H. Batty Shaw, Prof. S. Lyle Cummins, Drs. F. N. K. Menzies, G. Brookes Dixon, and John E. Chapman.

The following sections will each meet on one day.

Medical Sociology.

President: Dr. H. B. Brackenbury. Vice-Presidents: Drs. Alexander Forbes, L. A. Parry, Sir Leslie Scott. Hon. Secretaries: Dr. Arnold Lyndon, Grayshott, Hindhead, Surrey; Dr. A. H. S. Roberts, 428, Commercial-road, Portsmouth.

Provisional Programme.—July 27th.—Discussion: Mental Deficiency in its Social Aspects—(*a*) education, (*b*) segregation, (*c*) sterilisation. Dr. William Potts and Mrs. Helen Pinsent (Board of Control) will open the discussion. Drs. Henry Devine, C. Macfie Campbell (U.S.A.), Joseph F. E. Prideaux, Miss Evelyn Fox (Hon. Secretary, Central Association for Mental Welfare), Drs. W. Norwood East, and R. A. Gibbons will speak under the various heads.

Apparatus for mental tests and an exhibit of work done by mental deficients will be shown in the Pathological Museum. A film illustrating the education of mentally deficient children will be shown by Miss Evelyn Fox in the exhibition on Friday afternoon.

Orthopædics.

President: Mr. T. H. Openshaw. Vice-Presidents: Messrs. A. S. Blundell Bankart, James Russell. Hon. Secretaries: Mr. W. Martin, 43, Clarendon-road, Southsea; Mr. P. J. Verrall, 116, Park-street, London, W. 1.

Provisional Programme.—July 27th (10 A.M.).—Discussion: The Operative Treatment of Osteo-arthritis. To be opened by Mr. R. C. Elmslie, followed by Messrs. Harry Platt, P. Jenner Verrall, McCrae Aitken, and others. 11.45 A.M.: Papers: Mr. E. Laming Evans: Acute Rachitis in Late Childhood and Adolescence; Dr. Robert Milne: The Prognosis of Legg's Disease of the Hip; Mr. P. Bernard Roth: The Treatment of Fractures of the Lower End of the Humerus; Mr. Naughton Dunn: Congenital Talipes Equino-varus, its Prognosis and Treatment; Mr. T. H. Openshaw: Some Deformities of the Os Calcis.

Venereal Diseases.

President: Sir Archdall Reid. Vice-Presidents: Messrs. David Lees, Kenneth M. Walker. Hon. Secretaries: Dr. Archibald Cambell, 12, Prudential Buildings, Portsmouth; Dr. W. R. Snodgrass, 43, Ashton-terrace, Hillhead, Glasgow.

Provisional Programme.—July 27th.—Discussion: Prevention and Treatment of Chronic Gonococcal Prostatitis and Vesiculitis. To be opened by Mr. Kenneth M. Walker and Dr. David Watson.

Anæsthetics.

President: Dr. W. J. Essery. Vice-Presidents: Drs. H. E. G. Boyle, W. Carling, C. H. Mott. Hon. Secretaries: Dr. R. H. Emmett, The Corner, London-road, Portsmouth; Dr. H. R. Phillips, 2, Cumberland Mansions, Bryanston-square, W. 1.

Provisional Programme.—July 26th.—Papers: Dr. Harold Sington: Anæsthesia for Children; Dr. Arthur L. Flemming: Fatalities from Anæsthetics; Dr. H. E. G. Boyle: Paper and Demonstrations of Apparatus for Administration of Gas, C.E., and Oxygen.

The hon. local general secretary is Mr. C. A. Scott Ridout, St. Elmo, Clarendon-road, Southsea; the assistant hon. general secretary is Dr. E. J. Davis Taylor, 20, Clarence-parade, Southsea.

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

Amendment of the Sick Club Act.

THE law relating to sick-clubs has recently been amended. The Government had intended a fundamental alteration of insurance laws, but this would have entailed great loss of time, and the financial position of the clubs necessitated immediate assistance. An Act was therefore passed to obviate the more pressing difficulties. The Minister of Labour is thereby empowered to fix the maximum income, receipt of which compels the receiver to belong to a sick-club, but workmen, apprentices, and domestic servants will continue to be compulsory members apart from their rate of wages. At present the maximum income is fixed at M.4,880,000 a year. Members who receive more than this amount must continue to pay contributions for three months. Sick-clubs attached to individual factories and trades are to be licensed only when they contain more than 1000 members, otherwise they are compelled to amalgamate with a local general sick-club. The new law provides that the bottles for medicine given to club patients in the pharmacies belong not to the patient but to the club, and that clubs are authorised to issue regulations to safeguard their property. The General sick-club of Berlin, the largest in Germany, has therefore ordered that every patient receiving medicine has to give security to the chemist to the value of the bottle.

Problem of Decreased Birth-rate.

In a recent lecture delivered before the Berlin Medical Society, Dr. Hamburger stated that the general rate of mortality in Germany had apparently improved since the war, not because of any general improvement of health (the latter having, as a matter of fact, become much worse) but because of a decreased birth-rate. In 1920 the surplus of births over deaths was 10·3 per cent., and in 1921 11·4 per cent., but in the first quarter of 1922 the figure sank to 6·9 per cent. The last quarter of 1920 saw the greatest number of weddings of recent years, so that a record number of births was expected in the third quarter of 1921; but the actual figure was much lower than that customary before the war. Thus the greater part of the population must be presumed to have used means to prevent births. Infant mortality has decreased among children born in wedlock, whilst among illegitimate children it has remained stationary. Obviously a smaller number of children enables the mothers to take more care of each individual child. Infant mortality was at one time higher in Germany than in any other civilised country of Europe, owing, it was commonly stated, to the habit—common among the poorer classes—of overfeeding infants, which often caused severe gastro-intestinal trouble, with choleraic diarrhœa, leading to death. The desire to avoid parenthood has stimulated illegal induction of abortion, which is often followed by puerperal fever. Dr. Hamburger stated that about 5000 women annually die from puerperal fever in Germany, and that about 15,000 more, after having that disease, are left with sexual organs so injured that they are unable to give birth to a child. In the discussion which followed the reading of Dr. Hamburger's paper, Prof. Bumm stated that the majority of cases of puerperal fever were due to illegal abortion. In the gynæcological clinic at the University of Berlin, he said, the number of abortions exceeded that of births. Formerly only unmarried women resorted to the practice, but now about 80 per cent. of miscarriages occur in married women, the reason being the general financial distress of the population and lack of room for more children. The procuring of abortion, apart from medical necessity, was now a crime, but it had been proposed—and Parliament might shortly consider the proposal—that artificial abortion, if performed at the mother's request, by a qualified medical man, should be permitted. The practice of abortion had already spread so widely that it would scarcely be possible to abolish it. Dr. Hirsch spoke of the advantages of rearing a smaller number of healthier children in preference to a larger number, including many unfit to some degree. In his reply, Dr. Hamburger stated that the number of births had considerably decreased during the war in all great cities—e.g., Paris, Moscow, and Berlin, but that everywhere the number had risen afterwards—least in Berlin, and most in Moscow, although artificial abortion was not legally prohibited in Russia. It could thus be performed by qualified medical men, a fact which would greatly reduce the number of deaths from puerperal fever. The only remedy against the decrease of births would be an improvement of the financial condition of Germany.

Organisation of the Universities.

The Secretary of State for Education lately stated before the Prussian Parliament that the organisation of the personnel of the universities, and especially of the Medical Faculties, is to be simplified. Hitherto it has been composed of the following categories: (1) The ordinary professors, having a seat in the faculty, and a vote in elections to the offices of dean of the faculty and rector of the university; (2) extraordinary professors, with a commission to teach certain branches of medicine, who receive a salary apart from lecture fees; (3) extraordinary professors not having a commission, and receiving lecture fees from the students but no salary from the Government—i.e., the "privat-docents" with no other privilege than that of delivering lectures, although some had the title of professor conferred upon them by the Minister of Education. Henceforth there will be (1) ordinary professors; (2) extraordinary professors, all salaried, and all possessing the right to vote in the elections of dean and rector, these offices remaining open only to ordinary professors; (3) privat-docents, having the right of sending representatives to meetings of the faculty, with a consultative vote. The title of professor will henceforth be reserved to the appointed members of the faculties. Towards the end of the imperial régime the title of "professor" had lost much of its former value in the scientific world, as it was commonly conferred by the Government upon privat-docents, assistants of university clinics and institutes, and even hospital physicians and specialists having no connexion with the universities. The termination of this abuse—as the Republican constitution forbids conferment of a title unless the bearer holds an office—will give a great advantage to the university professors, and will place other medical men under a corresponding disadvantage, as the public will continue to believe that a "professor" must be cleverer than a medical man without that title.

Training of Nurses for Children.

New regulations on the training and examination of nurses for children have been issued by the Minister of Public Health. The training will extend over two years in a children's hospital; only women of at least 20 years of age, possessing a certificate of health and good conduct, will be admitted. Qualified midwives desiring to obtain the certificate will be allowed to undergo a shorter training. The examining board will be composed of a medical officer and two specialists in children's diseases. The examination includes the elements of anatomy and physiology of the human body, the care of healthy and of sick infants, the preparation of food, and the diseases of children, with prophylaxis of infectious diseases, disinfection, and reports to medical attendants. Special stress is laid on the principles of feeding of infants, and on the care of diseases of the gastro-intestinal canal. The candidate must nurse a couple of children for some days to the satisfaction of the examining board, and must make a full report on the cases. Candidates who have passed the examination receive a certificate by which they are allowed to call themselves "qualified children's nurses"; a qualification which may be withdrawn for immoral conduct or unprofessional behaviour.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

Correlations Between Syphilis of the Aorta and Syphilis of the Nervous System.

Dr. Frisch, in a recent report to the Medical Society of Vienna on the results of investigations into the combination of syphilis of the aorta and syphilis of the nervous system, stated that he had examined 115 manifest cases of the latter condition, of which 39 per cent. showed distinct symptoms of syphilitic aortitis. In general paralysis of the insane he found 29 per cent., in tabes dorsalis 48 per cent., and in cerebro-spinal syphilis 35 per cent. of cases with aortitic changes. It is peculiar that of the whole series only 2 patients complained of subjective symptoms due to this condition; in all other patients the aortitis gave no discomfort. Dr. Frisch thought that this fact was due to a disturbance of the sensibility of the viscera, and that syphilitic aortitis was much less troublesome in itself than the arteriosclerotic form. He suggested that the chemotropism of the spirochæte was influenced by the cellular make-up of the individual attacked by the disease, so that ectodermal syphilis of the nerves was opposed to mesodermal syphilis of the aorta.

Statistical Data Concerning Cancer.

In the pathological institutes of Vienna exact statistics referring to cancer incidence are being prepared. During the past 10 years cancer was noted as present in 8 per cent. of post-mortems observed there, the ratio of frequency being as follows: intestinal canal, stomach, 30 per cent.; colon, 15 per cent.; œsophagus, 6·5 per cent.; ovaries and uterus, over 15 per cent.; gall-bladder, 6 per cent.; mammæ, 5·5 per cent.; respiratory system, 3·5 per cent.; other organs were less frequently affected. Of all neoplasms, over 94 per cent. were cancerous; sarcomata and mixed tumours were not frequent. The cancer incidence has been fairly stable for a number of years, whilst tuberculosis, for instance, shows rhythmic increase and decrease. In recent times, following the increase of early diagnosis and early treatment, the number of unrecognised cases of cancer has been markedly lower, but over 8 per cent. of the cases are still unsuspected by their medical attendants or are at least termed "intercurrent," another disease being regarded as the underlying cause of death. There is apparently a slight progressive increase in the incidence of cancer of the breast and sexual organs in females.

A Secession from the Medical Organisation.

Nearly 100 per cent. of the medical men in Vienna, practitioners and other doctors alike, have hitherto been united in a solid body known as the W.O. (Wirtschaftliche Organisation, or economic union) of Vienna. By strict adherence to a trade-union system, coupled with liberal recognition of the needs of each group in the union, a large number of professional grievances have been abated and numerous advantages have been obtained for members. One of the most notable achievements in this connexion was the securing of the free choice of doctor, to which the Krankenkassen (sick-clubs) of the State railways, of the Municipality of Vienna, and of the Civil Service had to agree, a comparatively satisfactory rate of payment and employment being thus obtained for the profession in general. Now, however, a serious upheaval has occurred and the large group of non-practising hospital assistants and juniors, numbering some 560, have resolved to resign their membership; this break in the solidity of the W.O. is seriously handicapping its work. The trouble arose over a decision of the board of the W.O. to the effect that hospital doctors with full pay should not practise privately, and that no married house physician or house surgeon should be appointed. As the W.O. is chiefly concerned with the economic welfare of its members and private practice is the paramount object of every doctor, this decision is in the nature of protection of the private practitioner from the competition of men not handicapped by household expenses, who are at the same time able to command the use of hospital appliances with no cost to themselves. The hospital doctors, in taking such drastic action, have apparently overlooked the fact that the junior of to-day is the practitioner of to-morrow. Further consideration has already given rise to a counter movement in the seceding section, aimed at re-entry into the union. In order to facilitate this movement a new governing body is to be elected by a fresh system of voting, which will ensure to every group of doctors (i.e., general practitioners, specialists, public health officers, panel doctors, hospital staffs, lecturers, research workers, &c.) a representative on the board. Each section will delegate its own representative and an attempt will be made to reconcile the demands of hospital doctors with general professional needs. Other reasons for secession have also been advanced by several groups of members, chiefly relating to politics, religion, or nationality, but the board rightly insisted on its strictly economic duties, refusing to consider any standpoint other than that of the man in practice, who cannot afford to select his patients according to creed or political convictions.

Anti-Rabies Campaign.

At a recent meeting of the Medical Society Prof. Schnürer read a paper on methods of combating the spread of rabies amongst dogs; fully 93 per cent. of all cases of hydrophobia are due to injuries by infected dogs. Towards the end of the war, and since that time, there has been, apparently throughout Europe, a distinct increase of cases amongst dogs. In Austria during 1921, 228 diseased dogs were reported; this figure rose to 581 in 1922. The rise was due not only to a relaxation of previously strict rules concerning household animals on the Continent generally, but also to an actual increase in the number of dogs. In Vienna, for instance, there were in 1919 about 37,000 dogs kept under licence; in 1922 the figure was 81,000—i.e., 1 dog to every 26 inhabitants. One of the chief means of prevention of rabies is to keep down the number of dogs by means of high taxation and licensing duties. In Vienna any dog found in the street without a special "dog medal" around his neck is liable to capture and destruction by the municipal dog-catcher, and no dog is allowed in the street without muzzle and chain. These two simple rules, if rigidly enforced, are sufficient to produce a rapid diminution of the number of cases of rabies. Compulsory notification of all cases of rabies, whether manifest or only suspect, is very important, and is enforced by law for all animals in Austria; every instance of a person being bitten by a dog, or of the killing of a suspected dog or cat, must also be reported to the authorities. Every suspected animal must be killed at once or kept under observation for four months in a special veterinary hospital. These measures have, of course, proved efficacious in nearly all civilised countries, and in some the disease has been eradicated, but every now and then a relaxation of vigilance, or an act of carelessness on the part of an owner, causes a fresh outbreak.

An Attack on Professional Secrecy.

Dr. Höples, Chief Public Prosecutor in Vienna, recently requested all medical corporations to inform their members that Austrian law requires every practitioner, hospital physician and surgeon, and midwife to inform the police of cases of attempted abortion coming to their professional knowledge. As numerous members of the medical profession had lately failed to comply with the requirements of the law, and as deliberate abortion is a criminal offence, he wished to remind doctors of their statutory duty in the matter. This request aroused unanimous opposition from medical men. The Vienna Aerztekammer (Medical Council) pointed out in a protest that it involved an attempt to abolish professional secrecy, which a doctor is compelled by law to maintain, being forbidden to disclose any knowledge obtained from his patients unless expressly questioned by order of a judge, and then the disclosures can be made only to the judge himself. If every case of suspected abortion was reported every case of hæmorrhage in a woman came under suspicion, and the situation would become impossible. A withdrawal of the order in question was demanded by the Council; a similar stand against its application was taken by the members of the Forensic Society of Vienna, by whom Dr. Höples was invited to open a discussion. The majority of the speakers—medical and legal—wished to leave such cases to the discretion of the doctor, permitting him to decide when a case of abortion was suspicious. During the discussion many who took part advocated a cancellation of the law making deliberate abortion a crime. Nowadays, it was argued, the right to curtail the family should rest with the parents; indiscriminate procreation of weak or sickly children did not tend to improve national health, whilst where there were children already an addition to the family might prove disastrous. Medical men strongly objected to assuming the rôle of police agents, a rôle which might be attributed to them if there was any weakening of professional confidence between themselves and their patients.

June 13th.

CZECHO-SLOVAKIA.

(FROM OUR OWN CORRESPONDENT.)

The Report on Vaccination.

THE law on compulsory vaccination, passed in 1919, has been very strictly enforced and has resulted in the eradication of small-pox in Czecho-Slovakia, but a considerable proportion of the population is strongly opposed to the measure. A number of protests made to Parliament have been handed over to the State Health Council for consideration. The opponents of compulsion ask for a State guarantee for cases where permanent damage or death may result from vaccination; many of the protests, of which the majority come from city councils, ask for the appointment of a joint committee of medical men and opponents of vaccination to study the question. The Health Council approved a resolution rejecting all suggestions contained in the protests, and recommended the organisation by the Public Health Service of a wide campaign of public health education, with special reference to vaccination and to the eradication of small-pox. The Council also opposed a suggested modification of the law on the lines of the present English law.

Social Insurance Scheme.

Dr. Lev Winter is giving a series of lectures in the Institute of Social Sciences, Prague, on the proposed scheme for social insurance (comprising sickness, old age, and invalidity insurance). This scheme was prepared by a special committee instituted for the purpose by the Ministry of Social Welfare, and Dr. Winter is among its most energetic supporters. The political parties upholding the present coalition régime have included social insurance in their working programme, and it is expected that the insurance scheme will be put into effect by Jan. 1st, 1924. The whole project is divided into two parts, one relating to insurance of labour and Civil Service officials, with provision for pensions, the other relating to insurance of small craftsmen and farmers—this latter part of the scheme being not yet completed. The two parts will come before Parliament separately; the Parliamentary Committee on Social Insurance will hold continuous sessions until the necessary work is finished. It was originally intended to include accident insurance also, but later it was decided to separate the latter, which has already existed for a long time, lest the machinery of insurance should become too complicated. The insurance of miners was also excluded, as this class of workers already have a system of their own. The projected scheme covers all wage-earners whose insurance is not provided for by any other means. The unit of organisation will be the political district (with an average population of 60,000 persons); in each district a bureau of social insurance will be created. In these bureaux will be concentrated all the existing small bureaux, which have been largely in the hands of political parties and were often badly managed. District insurance affairs will be controlled by delegates elected by the insured members; these delegates will elect an executive committee to direct the insurance bureau. The members of executive committees will elect and send 20 representatives of insured persons and 12 representatives of the employers to the Central Board of Social Insurance in Prague. Eight members of the Central Board and its chairman will be appointed by the President of the Republic. Payments to insured persons in case of sickness will be practically the same as under the present laws (approximately two-thirds of the member's wage). The projected law lays more emphasis on prevention of disease and on early treatment than on support of the sick member. The latter will be entitled to the invalidity and old age benefit after payment of 200 weekly contributions. Insured persons prevented by sickness from earning more than one-third of their previous wages will be entitled to invalidity benefit, and those attaining the age of 65 years will receive the old age benefit; both these benefits will begin at 1000 crowns a year (150 Czecho-Slovak crowns equalling £1 sterling). The widows' benefit will be half, and the orphans' benefit one-third, of that sum. Payments will be made, half by the employer and half by the insured person, to the district insurance bureau. The insurance scheme will affect approximately 2,500,000 persons, two-thirds being males. It it anticipated that the scheme will unify sickness insurance and accelerate the development of preventive medicine in the Republic.

A Malaria Census.

The Ministry of Health have published facts relating to the spread of malaria in the Republic, based on the returns of a census especially organised for this purpose. The total number of malaria patients in Czecho-Slovakia was 26,664, of whom only 28 are women and 7 children; 16,345 soldiers contracted malaria during the war outside the territory of the Republic, and only 187 persons contracted the disease within the boundaries of the State. Although investigators detected anopheles in considerable numbers in some parts of the Republic, the facts seem to indicate that malaria was brought into the country by soldiers, and that it will die out automatically.

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THREE COUNTY BOROUGHS.

THE following table gives the principal health statistics for three county boroughs, which have the point in common that they are comparatively free from industrial smoke. The death-rates from respiratory diseases, &c., however, are swollen in each case by the increased prevalence of influenza in 1922 when comparison is made with the previous year. The table also gives the principal health statistics of three of the smaller boroughs for 1922:—

Name of district.	Estimated population (mid-year).	Birth-rate.	Death-rates per 1000 of population.				Death-rates per 1000 births.		
			All causes.	Tuberculosis.	Cancer.	Respiratory with Influenza.	Infant mortality		Maternal mort. in childbirth.
							Legit.	Illegit.	
Brighton	135,000	16·9	14·0	1·3	1·8	3·3	61	143	3·5
Croydon	192,300	18·2	12·4	1·1	1·3	2·7	59	170	4·6
Reading	92,990	18·5	12·2	1·1	1·2	2·5	53	133	1·2
Three Smaller Boroughs.									
Ealing	67,890	16·2	11·0	0·7	1·3	2·2	43	255	2·7
Hove	44,110	13·1	14·2	0·8	—	—	39	148	3·4
Tunbridge Wells.	34,360	14·8	14·4	0·9	1·6	2·3	67	193	2·0

Brighton.

Dr. Duncan Forbes reports that during the year the Corporation have completed a desirable suburb at Moulsecoomb by the erection of 278 houses (making a total of 470), and that the first steps have been taken to deal with a small part of a slum area. Private enterprise has only contributed seven new houses during the year. The club-room for male consumptives continues to provide interest and enjoyment for patients under open-air conditions and coincidently a certain amount of voluntary segregation. Since January, 1921, the midwives have practised the

routine administration of argyrol to the babies' eyes, and during these two years there has been a noteworthy drop in the notified cases of ophthalmia neonatorum. Of syphilis cases, 21 males and 12 females completed treatment during 1922, while 58 males and 26 females ceased to attend during treatment. With the exception of two consultants, no medical practitioners have made application for salvarsan substitutes during the year.

The school report states that the zinc ionisation treatment for discharging ears was introduced during the year and has given successful results. Details of typical cases are given. Of 58 cases treated, 42 were cured. A careful note is made of "tonsil and adenoid" cases before operation, and a note of the condition one year after operation is made for comparison. Of those children suffering from complications, the "year-after" examination showed that cures had been effected in 65·7 per cent. of the deafness, 62·7 per cent. of the otorrhœa, and 40 per cent. of the enuresis. Scabies in the schools is now down to pre-war proportions. The X ray treatment of ringworm continues to give good results. The new hair in most cases is very abundant, silky, and inclined to curl, a fact which gives "intense satisfaction to the parents." The system of examining ringworm contacts has been adopted. Of 181 contacts examined, 59 were found to be suffering, 18 of whom were under school age.

An industrial class for ineducable mentally defectives is run by the Guardianship Society, and it is hoped that a Ministry grant will soon be forthcoming for such classes. Rug-making, needlework, knitting, bead-threading, and drawing are taught. The secondary schools include boys and girls who have had dental treatment whilst at the elementary schools, and it is satisfactory to learn that 53 per cent. of the boys and 51 per cent. of the girls examined at the secondary schools during the year were found to have sound or perfect teeth.

Croydon.

Dr. K. Simpson, acting medical officer of health, reports that housing conditions are, on the whole, better, but that the improvement is slow. He recommends a more general enforcement of the by-laws for houses let in lodgings adopted in January, 1921. The 15 beds subsidised at St. Mary's Maternity Hostel are insufficient and at least 35 to 40 beds are needed. The normal births at the hostel are attended by pupil-midwives under supervision and the abnormal cases by a rota of practitioners. Of the 309 births occurring in the institution only 289 were live births, 10 being viable, and 10 non-viable stillbirths. Midwives attended 45 per cent. of the registered births in the borough, 1655 being live births and 52 stillbirths. Dr. Simpson advocates the provision of dental treatment for expectant mothers and a closer coöperation between the ante-natal and venereal disease clinics. Special weekly clinics for foster-children were instituted in 1921 and massage clinics are held for children suffering from various atrophies, rickets, debility, &c.

Additional tuberculosis visitors are needed to cope with the work of bringing up contacts for examination. During the latter part of the year the available accommodation at the special school for mental defectives proved insufficient, and Dr. Simpson thinks some other provision should be made for the lower-grade cases, who are, at present, a hindrance to the progress of the higher-grade child. A beginning has been made by the provision of a small occupational class for children of too low a grade to attend the special M.D. school. A table is given showing that of 593 milk samples (town and country) examined since 1900, 48, or 8 per cent., proved to be tuberculous. Additional accommodation for the staff is needed at the hospital and also more cubicles for patients with a view to preventing "cross infection."

Dr. Simpson would like to see the practice of giving diphtheria antitoxin in clinically suspicious cases, while the result of the swab examination is being awaited, more generally adopted. The present dental staff is insufficient to cope with the work. Out of 2129 children referred for treatment, only 914 received treatment. Some more adequate scheme is needed to secure the provision of spectacles for the school-children who are found to need them. Amongst other needs mentioned by Dr. Simpson are the "scrapping" of the older types of school desks and the provision of electrical treatment at the massage clinics, and he includes in his report an extract from a report by Dr. Veitch Clark strongly recommending the establishment of an open-air school and also that the windows of the class-rooms of future schools should be casement windows which will open right back to the wall so as to enable the class-room to be converted into an open-air room when desired.

Reading.

Dr. H. J. Milligan tells us that housing conditions are still unsatisfactory. The census returns show that about 10 per cent. of the houses are occupied by two families. Reading is a town well adapted for the use of shelters for consumptives, and the 33 provided by the Council have all been fully used during the year. The treatment with collosol calcium has been tried on a small scale. The 13 cases treated were all cases who had had considerable hæmorrhages and tubercle bacilli in their sputum. None of them had hæmorrhage after treatment, but in no case did the tubercle bacilli disappear from the sputum.

Dr. Milligan thinks the time has now come when only fully trained nurses should be allowed to qualify as midwives. He estimates that, as the result of the extension of the infant welfare movement, two-thirds of the children in the borough now come under the supervision of the centres. The damage from the seven notified cases of ophthalmic neonatorum was high, one case with corneal nebulæ, and another with one blind eye, and the remaining eye damaged. There were 253 confinements in the municipal maternity home with no maternal deaths and 5 stillbirths. The staff of midwives delivered 208 and the remaining 45 were attended by the doctor of their choice. Two years' experience have proved the success of the home and the medical arrangements. At the ante-natal clinic it is found that very few of the women are willing to undergo dental treatment. The day nursery has been closed, an investigation having shown that foster-mothers are forthcoming to meet the normal demand.

The farmers in the Reading district specialise in Grade A (tuberculin-tested) milk, and there are now about 20 in the district supplying this class of milk, which is sold in Reading at only 1*d.* per quart above the price of ordinary milk. The spread of the clean milk movement in Reading is due to the energetic propagandism of the National Institute for Research in Dairying. It is to be hoped there will soon be many more such institutions in different parts of the country.

In his school report Dr. Milligan refers to the "almost complete absence of rickets" and to the great effects to be expected in after years from the attention now given to the teeth of the school-children. He regrets, however, that so many parents do not yet appreciate the importance of early dental treatment for their children.

THREE SMALLER BOROUGHS.

Ealing.

Dr. Thomas Orr reports that scarlet fever and diphtheria have been prevalent throughout the year and that diphtheria caused a death-rate of 0·41. The gross pollution by sewage of the Brent continues, but an improvement is expected when the alterations at the Wembley sewage works are completed. A serious nuisance is caused by a refuse dump at Northolt, outside the borough, owned by one of the metropolitan boroughs, and Dr. Orr makes out a good case for new legislation conferring powers on local authorities to prevent the establishment of such refuse dumps in their districts. Housing difficulties still remain, but good work has been done in improving the older houses. Six cases of lead poisoning in the borough

were attributed to the drinking of beer contaminated by lead-glazed containers. The containers were removed immediately on the discovery of the cause of the outbreak.

In his school report, Dr. Orr states that all cases of adenoids are recommended for operation and cases of enlarged tonsils which suffer from (*a*) repeated sore throats, (*b*) repeated colds, (*c*) obstruction, (*d*) deafness, or earache, or (*e*) "winter coughs." Of the cases operated on in past years 57·6 per cent. showed a definite improvement in health, while of those not operated on only 2·2 per cent. showed an improvement. It would be interesting to know in such statistics the exact nature of the tonsil operation and if enucleation is found to give better results than less radical operations. Dental treatment and inspection is very thorough in Ealing. More than two-thirds of all the school-children were inspected and the percentage of "leavers" with sound teeth is now over 70, or about double what it was in 1915.

Hove.

Dr. Augustine Griffith reports that no working-class dwellings were erected in 1922 and that at least 100 are badly wanted. The Council have passed a scheme for 20 more, but they are not yet begun. The water-supply had to be cut off during the evening and night up to June, since when there has been a continuous supply. The new crushers for house refuse have been a success and during 1922 for the first time the refuse has been disposed of without nuisance and with benefit to agriculture. An outbreak of scarlet fever in connexion with a school is attributed to healthy carriers.

Tunbridge Wells.

Dr. F. C. Linton gives the death-rate corrected for age and sex constitution as 12·5. He again draws attention to the unsuitability of the premises in the basement of the health office for use as a maternity and child welfare centre. Owing to this cause antenatal work has not yet been undertaken. The extension of the administrative block of the isolation hospital, sanctioned in 1914, has not yet been carried out. In his school report Dr. Linton says: "The standard of school cleanliness has not been high and has not shown signs of rising during the past ten years." Perhaps Tunbridge Wells is like some other health resorts and the mothers are so taken up with the visitors that they have not time to attend to their own children.

SCHOOL MEDICAL SERVICE.

Kent.

IN 1914 the average number of children on the school roll in Kent was 84,707 in 446 schools, compared with 79,683 in 441 schools in 1922. This is attributed to the fall of the birth-rate and to the committee's policy of excluding certain children under 5. There has thus been a marked diminution of the children medically examined, 21,947 children being seen at routine inspection, and 4866 of these being referred for treatment. In addition there were 4657 special examinations and re-inspections. Children excluded by the nurses for uncleanliness totalled 1235, against 1219 last year. Altogether 142,620 children were examined by the school nurses, necessitating 2639 nurses' visits to schools, and about 7 per cent. of these children were found to be verminous in different degrees. Dr. Alfred Greenwood suggests that the wearing of hair in plaits would reduce these figures considerably. The cases of enlarged tonsils and adenoids numbered 4429, 1104 of them requiring operative treatment. Twenty-five cases of phthisis were recorded during the year, while phthisis was suspected in 109 cases. Also there were found 65 cases of non-pulmonary tuberculosis. There was a marked increase in the incidence of infectious disease; the total number of closures was 204, compared with 42 the previous year. Influenza accounted for 65, measles 60, and whooping cough 45. Altogether 60 cases of ringworm were treated by X rays with an average of 60 days between treatment and readmission to school. Of the 193 cases treated by other methods, the average absence was 145 days. Special investigations were held by the assistant school medical officers into (1) the occurrence of goitre in school-children, (2) the practice of breathing exercises in schools, (3) rickets, (4) postural deformities, and (5) water-supply of schools. All these inquiries have elicited interesting information. In one school in the Cranbrook area enlarged thyroid appeared in 20 girls and 8 boys out of a total of 180 children. Among girls of 13 to 14 there were eight cases and four among boys of the same age. Four girls and four boys of 8–9 years of age showed enlargement. Three families accounted for seven of the 20 girls. It was found that the old method of conducting breathing exercises still prevails, the exercise consisting of breathing in through the nose and out through the mouth in the 46 schools examined; handkerchiefs were made use of in only seven schools, and mouth-breathers selected for special examination in only three schools, the reason given being that there was little time available for such action. The shortsightedness of such a policy is very obvious to a teacher with any knowledge of the influence of health on educational results, and it is comforting to reflect that the newest crop of students from training colleges are alive to this. The report on lavatory accommodation in 413 schools is illuminating. The washing accommodation is absurdly inadequate; 29 schools and 10 departments have no washing utensils whatsoever. Yet there is no doubt that the figures are better than in quite a large number of districts, which goes to show how much educational effort is still required in this department of school hygiene.

Eccles.

An open-air school with accommodation for 40 children at Peel Green has now been provided for the borough of Eccles. The premises consist of a large room, 63 by 23¼ feet, with a covered verandah in front. The room is closed at night by sliding partitions which run on overhead tracks and which are used in the daytime to divide this large room into four separate class-rooms. The eastern part of the room is used as a dining room, and the two western parts as rest rooms. During class hours the folding beds are stored in the western portion, and the two central rooms are used as class-rooms. Along the north side a corridor runs dividing the class-rooms from the bath-room, kitchen, teachers' room, and store-room on the other side. The bath-room contains three foot-baths with hot and cold sprays, and dressing boxes for six children. Three meals a day are provided—lunch from 9.30 to 10.30 A.M., consisting of porridge with sugar or treacle and milk or bread and milk; a two-course dinner at 12.30 P.M. and tea at 4.30 P.M., consisting of cocoa, bread, butter and jam or bread and dripping. Cod-liver oil and malt, or Parrish's food and cod-liver oil are given after each meal. Breathing exercises are taken twice daily, as also a tooth-brush drill. There is no mention in the time-table of regular bathing. The daily cost of food per head worked out at 9·2 pence; including car fares and cod-liver oil and tooth-brushes the cost was 10·5 pence. Of the total, £197 17*s.* spent in the seven months since the opening, £166 2*s.* was refunded by the parents, the full charge being 5*s.* a week. The number of children examined at routine inspection was 2462, and of these 613 were recommended for treatment, 318 receiving treatment during the year. Dr. J. E. Spence reports that the nurses' routine examination of all school-children twice a year has resulted in a much higher standard of cleanliness. It would seem unfortunate that the lavatory accommodation in the schools is either inadequate, or where adequate, that towels and soap are often not available. Dr. Spence pleads with the teachers to impress upon the children a reasonable standard of personal cleanliness, supplementing lectures on personal hygiene by the simple but effective method of sending them out to wash their hands when necessary.

Correspondence.

"Audi alteram partem."

OPIUM IN SEPTIC PERITONITIS.

To the Editor of THE LANCET.

SIR,—Mr. H. W. Carson's article on the Evolution of the Modern Treatment of Septic Peritonitis, and your editorial on the same subject in THE LANCET of May 19th, raise the question of how the surgeon is to reconcile the adoption of the method of the post-operative administration of opium, which was so recently thought to be disastrous and which is now rapidly gaining favour, with the present conception of the physiology of absorption from the peritoneal cavity. From recent experimental research carried out in the University of Toronto I have demonstrated that in diffuse septic peritonitis there is a fatal absorption through the thoracic duct. This finding explains quite clearly why good results follow the administration of opium. The flow of lymph through the thoracic duct is caused by: (1) respirations—exerting a pumping action on the duct as it traverses the mediastinum; (2) muscular activity—causing an intermittent increase in the intra-abdominal pressure; (3) the suction of the blood-stream in passing the opening of the thoracic duct—a factor hitherto unrecognised.

These are the three main factors, and the action of opium on them is as follows: (1) It slows the respirations, thus diminishing the lymph flow. (2) The abdomen is put at rest; vomiting, which produces a marked increase in the lymph flow, is lessened. (3) The blood-stream is slowed and the suction on the duct is reduced to a minimum. The beneficial action of the Murphy method of treatment may also be explained in the light of this new conception of the physiology of absorption from the peritoneal cavity and the lumen of the bowel.

Shortly after the research referred to was done I drained the thoracic duct in a girl of nine suffering from pneumococcic peritonitis, and she made a very pleasing recovery. Attention is drawn to this phase of peritonitis in the hope that the acceptance of the principle may lead to the formation of a better method of treatment of septic peritonitis.

I am, Sir, yours faithfully,

Toronto, June 4th, 1923. WM. A. COSTAIN, M.B.

TOXIC SYMPTOMS FOLLOWING THE ALKALINE TREATMENT OF PEPTIC ULCER.

To the Editor of THE LANCET.

SIR,—In view of the fact that I have for several years been a strenuous advocate of the medical treatment of gastric and duodenal ulcer in preference to surgery, I think it only right to draw attention to the possibility of toxic symptoms arising as a result of using very large doses of alkalies. Sippy, who was the first to recommend this treatment with the object of completely neutralising the acid of the gastric juice, has not referred in any of his papers on the subject to the toxic symptoms which may result. In a recent paper from the Mayo Clinic, Hardt and Rivers [1] describe the toxic symptoms which may develop in cases in which it is impossible to neutralise the acid completely. The patient is at first unduly introspective and nervous. He then complains of difficulty in taking his milk. After a time headache, nausea, and vomiting occur. The patient becomes apathetic and drowsy, and in one of their cases death ensued. In every instance the urea in the blood became greatly increased, and albumin and casts appeared in the urine. In some there was evidence of kidney disease before the symptoms developed, and in the fatal case definite chronic nephritis was found. I have met with three similar cases in private patients, though none in hospital, during the last three years. In one case the patient had only one kidney and this was affected with pyelitis. In the other two patients a moderate degree of pyloric obstruction was present and there was an extreme degree of hypersecretion. In one of these death occurred in spite of the early cessation of the alkaline treatment. The urea content of the blood was greatly increased in all three cases.

It is impossible at present to say what is the cause of the toxic manifestations. But it seems clear that no case in which the kidneys are diseased should be subjected to the full alkaline treatment, and the same is true when partial pyloric obstruction is present in spite of Sippy's advocacy of the treatment in such cases. If any suspicious symptoms develop, a blood-urea estimation should be made and the treatment discontinued until it is ascertained whether it is excessive; in that case the treatment should be modified.

For ulcers associated with renal disease treatment by diet, olive oil, and belladonna in the manner I have described, with only small doses of alkalies, may give sufficiently good results, but if pyloric obstruction is present, even in a mild degree, it is probably wise to recommend gastro-enterostomy without further delay.

I am, Sir, yours faithfully,

ARTHUR F. HURST.

New Lodge Clinic, Windsor Forest, June 17th, 1923.

[1] L. L. Hardt and A. B. Rivers; Arch. Int. Med., xxxi., 171, 1923.

TREATMENT OF HÆMORRHOIDS.

To the Editor of THE LANCET.

SIR,—Mr. R. M. Rowe's article on hæmorrhoids in THE LANCET'S series on Modern Technique in Treatment contains so much that is excellent, and summarises the subject of the symptoms and diagnosis of hæmorrhoids so clearly, that I trust it will not be considered churlish on my part to offer a few criticisms with reference to what he has written about the treatment of internal hæmorrhoids—especially the treatment by means of injection.

Mr. Rowe deals at some length with the palliative treatment of internal hæmorrhoids, and includes under that heading a method involving a week's rest in bed, special diet, and general and local medication. Now, palliative treatment implies that symptoms only are dealt with, and that the underlying pathological condition is not removed. All that the rather heroic palliative treatment, which Mr. Rowe suggests, can accomplish is to control hæmorrhage temporarily. Considering that treatment by means of injection not only produces immediate cessation of both bleeding and prolapse, but ultimately effects a permanent cure of the hæmorrhoids in the large majority of cases, and that this treatment—contrary to what Mr. Rowe hints—is applicable not only to the earliest cases but also to the most severe, I think it questionable whether it is ever justifiable to condemn a patient to a week's confinement to bed without at least explaining to him the advantages of the treatment by means of injection. By this means his piles can be permanently cured without any absence from business and without the use of unpleasant and messy local applications.

Mr. Rowe would limit the scope of the treatment by means of injection to such cases as present a single pile mass, which only occasionally prolapses from the anal orifice. I suspect that the explanation of this limitation on his part is that his idea of the effects of injection is radically erroneous. He—like many others—appears to believe that injection of a 20 per cent. carbolic solution produces thrombosis of the pile treated. As a matter of fact, thrombosis very rarely occurs, and, when it does, it is due to faulty technique. The actual effect of injection is to produce a rapid effusion of lymph into the submucous tissue of the pile; this subsequently becomes organised and contracts, thereby obliterating the vessels of the pile and producing adhesion between the mucous and muscular layers. Thrombosis, if it

occurs, results from the use of too strong a solution or from using too much. It is evidenced by severe and long-continued pain, which completely cancels the chief advantages of this method of treatment. When I have stated that I have had only one definite instance of thrombosis amongst some 3000 to 4000 cases, I have said enough to show the great rarity of this accident in a long series of cases treated by injection. "Septic thrombosis" I have never met with. Mr. Rowe gives the oft-repeated advice that only one pile should be treated at a time, and seems to be under the common delusion that two injections for each pile are likely to suffice. I fear that, if his directions in this respect are followed, the treatment will fall into disfavour, because recurrence will be the rule rather than the exception. My own practice is to inject as many hæmorrhoids as can be brought into view through a Kelly's speculum at the first sitting, and to repeat the process at intervals of a week until all visible traces of the hæmorrhoids have disappeared. I find that the average number of injections necessary to effect this is four; in some cases three are sufficient, whilst others may need as many as six. During the whole of the treatment rest in bed is unnecessary, and there need be no interference with either business or pleasure, beyond the avoidance of strenuous exertion on the actual days of the injection. Meanwhile no ointments or suppositories are required.

My technique was described in an article in THE LANCET for March 18th, 1916, and my results were summarised in an article published in the *Practitioner* last July. I am, Sir, yours faithfully.

ARTHUR S. MORLEY, F.R.C.S.

Gordon-square, W.C. 1, June 16th, 1923.

DELAY IN GIVING DIPHTHERIA ANTITOXIN

To the Editor of THE LANCET.

SIR,—May I aid in supporting the above appeal, so properly put forward by Dr. F. F. Caiger in your issue of June 9th, by quoting the following extract from page 490 of my report on the health of the Borough of Croydon during 1922.

"Fatality in diphtheria may be said in practically all cases, except the toxic variety, to be determined by the length of time allowed to elapse before the giving of antitoxin. Were the practice prevalent of giving no more than 2000 units antitoxin whilst awaiting the result of a swab in any clinically suspicious case, the present mortality of the disease would undoubtedly tend to be diminished. The naso-pharyngeal type of case which tends to the greatest fatality further seldom requires confirmation bacteriologically."

Were the practitioner able to see all cases of alleged diphtheria, have them confirmed or otherwise bacteriologically, and, if necessary, removed to hospital within the first 24 or even 36 hours of the onset of the disease, no great harm might probably result. This, however, is exactly what does not always happen.

That suspicious throats should be sent into hospital for diagnosis, as suggested by one of your correspondents as a matter of course, is to use the fever hospital for a purpose for which it was never intended on any general scale, not to mention the additional expense thereby involved, the unnecessary trouble caused to prevent cross infection, and the occupying of beds, it may be, required for actual cases of diphtheria awaiting admission, and probably their only opportunity of obtaining antitoxin. If antitoxin be given as a routine measure in all reasonably suspicious cases clinically resembling diphtheria, a heavy item in the present case mortality of the disease would be removed, an item whose removal at present is almost entirely in the hands of the general practitioner. The occurrence of anaphylaxis, to be expected in only some 5 per cent. of cases, is not a difficulty of sufficient magnitude to be more than seriously considered when the possible reduction of the death-rate in diphtheria is at stake.

I am, Sir, yours faithfully,

Public Health Department, Town Hall, Croydon, June 18th, 1923. K. SIMPSON.

To the Editor of THE LANCET.

SIR,—As a panel practitioner in a working-class district I sympathise very much with Dr. F. F. Caiger's suggestion (THE LANCET, June 9th) to administer antitoxin in all suspected cases of diphtheria. I do not follow the practice myself as a rule, though I do occasionally where I think the circumstances warrant it. I generally follow the alternative course of sending the child away direct to a M.A.B. hospital if I strongly suspect, but am not sure, of the diagnosis of diphtheria. I think it is probable that the death-rate from diphtheria will be materially lowered if antitoxin in sufficient doses were given as a routine practice in every case of suspected diphtheria. No doubt in some instances it would be difficult to overcome the prejudices of the parents, but diphtheria is feared so profoundly, and rightly, by the working people in industrial districts that there would be no difficulty if the doctor had made up his mind to adopt the practice as a routine. In districts like Bermondsey—and I believe elsewhere in London—the serum can be obtained gratuitously at the town hall, and I personally always keep a stock in hand obtained in this way. I do not think that there is any risk of anaphylaxis, because I understand that the highest authorities agree that repeated injections can be given, daily or at intervals up to ten days from the first injection, without invoking anaphylaxis. The suggestion has been made to appoint a consultative M.A.B. officer for throats, but I hardly think such an appointment would be of much value, as in the cases that turn out serious very often no possible diagnosis can be made by inspection or by clinical signs alone until it is too late.

On the whole I agree with Dr. Caiger. There are two alternatives before the doctor: (1) Send any case that may possibly turn out to be diphtheria into hospital the moment it is first seen, or (2) give it 6000 or 8000 units of antitoxin instanter, and await results of bacteriological investigation of the swab.

I am, Sir, yours faithfully,

June 19th, 1923. ANOTHER PANEL PRACTITIONER.

IN MEMORY OF JOHN CHIENE.

To the Editor of THE LANCET.

SIR,—As Prof. G. L. Gulland wrote in THE LANCET last week, time spent with John Chiene is a happy memory to many of his old students. I arrived in his wards in the Old Infirmary in the summer of 1879, silly in going to the wards before I knew any anatomy, but there were others as foolish. Mr. Chiene soon discovered there were some of his following who knew nothing of anything, and in particular that we had no idea of the great new principle of antisepsis in surgery. Shocked and full of pity, he assembled us infants in his wards for half a dozen lectures half an hour before the ordinary ward visits, determined that, though we were only paying for our infirmary tickets and paying nothing to him, we should at least not be wasting all our time. "To get a grip of principles, and to learn . . . to draw conclusions from his observations," Prof. Gulland truly says, was the object of his teaching, as it was also of the Edinburgh School, with the result that students who went through the school then were less slaves to authority and "the books" than others. The individual point of practice I most clearly trace back to Chiene is the use of elastic wove bandage and cotton-wool in the immediate treatment of black-eyes and sprains; most valuable and never noticed in print since, so far as I have seen, except by Mr. R. H. A. Whitelocke, of Oxford. A patient of mine sprained his ankle at 5.30, at 6 it ached, at 6.30 it had swelled, he could not put his foot to the ground and could not dine in mess. Hot water, cotton-wool, and elastic bandage, applied and re-applied, fixed him so that he bicycled 40 miles next day to an eagerly anticipated party. He was very grateful, but his gratitude was due to John Chiene.

I am, Sir, yours faithfully,

Waterlooville, June 18th, 1923. W. E. HOME.

FIBROMA OF THE OVARY.

To the Editor of THE LANCET.

SIR,—The account of a case of fibroma of the ovary with a summary of the literature by Dr. Ambrose W. Owen in your issue of June 16th, will be read with interest by all surgeons who have to deal with such.

I operated recently on a woman aged 73, who was sent into hospital by Dr. A. P. Walters, of Burgh-by-Sands, on account of an ovarian tumour he had previously tapped. Examination per vaginam detected a firm, hard mobile tumour joined to an ovarian cyst of the dimensions of a large football. The hard mass distinctly suggested a fibroid. The cyst proved to be multilocular, was free from adhesion, and turned out easily enough, but incorporated with its base was a fibroma about the size of a tomato. There was a broad connexion between the cyst and the fibroma and the latter had a rather long pedicle, whilst the broad ligament was opened up as far as the appendix region. It was obvious to those present that a fibrous tumour had been removed along with the cyst, and I halved the growth and sent a portion to Mr. Richard Muir, of Edinburgh, for examination, who wrote: "It is a very typical fibroma composed of well-formed fibrous tissue." This verdict was subsequently confirmed by Prof. S. G. Shattock.

The point of interest is the exact origin of the fibroma which at no point was attached to the uterus. Mr. Alban Doran, who also saw the specimen, considered that the fibroma arose from the utero-ovarian ligament. Dr. Owen's paper indicates how seldom such fibromas are met with in the experience of surgeons who operate upon hundreds of cases of ovarian disease. In his case there was abundant ascites and the tumour weighed 19½ lb., whereas in mine the tumour was small and there was no free peritoneal effusion. The patient's recovery was uneventful.

I am, Sir, yours faithfully,

H. A. LEDIARD,
Surgeon to the Cumberland Infirmary.

Carlisle, June 17th, 1923.

Medical News.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—At a meeting of the Council held on June 14th diplomas of Fellow were conferred on the following 24 candidates out of 91 candidates who presented themselves at the recent examination:—

W. Anderson, Aberdeen; H. A. Brookes, Edinburgh University and London; A. G. Bryce, Manchester and St. George's; C. Hope Carlton, Oxford and St. Mary's; G. R. E. Colquhoun, Cambridge and St. George's; D. I. Currie, Leeds and London; F. P. Fouché, Edinburgh and Guy's; G. J. Gillam, Toronto and St. George's; W. J. Lytle, Belfast and London; N. Makar, Cairo and St. Thomas's; P. J. Moir, Glasgow and London; J. W. G. Phillips, St. Mary's and London; J. McL. Pinkerton, Glasgow and St. Bart.'s; J. E. Purves, Edinburgh; S. D. Rhind, St. George's; W. Salisbury, Bristol and London; R. S. Scott and W. Shaw, Cambridge and St. Bart.'s; N. R. Smith, Sydney and Guy's; G. F. Syms, Guy's; D. R. Wheeler, Belfast and London; E. R. Wheeler, King's College; R. L. Williams, Cambridge and St. Bart.'s; and S. H. Woods, Dublin, London, and Guy's.

Licences in Dental Surgery were conferred upon the following 76 candidates:—

G. W. Aaronson and E. J. Anderton, Royal Dental; D. J. Andrews, Bristol; G. Armytage, Royal Dental; L. Ayliffe, Manchester; Caroline W. Bailey-King, Royal Dental; H. P. Baylis, Guy's; A. W. Bell, C. A. Bennett, and P. Bentley, Royal Dental; J. V. Bingay, Guy's; F. R. Boetius, London; W. L. Boness, Guy's; W. R. B. Booth, Manchester; W. J. Buttle and F. R. Christian, Royal Dental; J. W. Clark, Durham; D. G. Comber, Royal Dental; F. Crone, Guy's; J. W. Curley, Royal Dental; A. S. Davies, Guy's; A. C. Deverell and G. S. Dingley, Royal Dental; G. B. Drury, Birmingham; S. J. du Plessis and J. U. H. du Preez, Royal Dental; G. A. Edwards, Leeds; R. Edwards, Guy's; C. Fletcher, H. G. L. Fletcher, A. T. S. Fourie, and H. A. S. Gaffyne, Royal Dental; W. Gardner, Sheffield; P. N. Gibbs, Birmingham; A. S. Gosling, Royal Dental; H. Haines, Birmingham; H. D. Hall, Guy's; G. M. Hay, Royal Dental; E. V. Hayes and F. H. Hayns, Guy's; L. H. Head, Durham; J. Hegarty, Liverpool; W. A. Linnell, Manchester; T. G. Lloyd, Guy's; A. C. Maguire and I. Mann, Royal Dental; C. B. May, Birmingham; R. N. Merrett, London; R. Milburn and E. W. Pedley, Royal Dental; H. L. Pitt, University College; C. Pratelli, Royal Dental; L. F. L. Pringle, Durham; W. N. Reynolds, London; J. B. Roberts and V. R. Roberts, Guy's; Gladys M. Seal, Royal Dental; P. B. Sharp, Royal Dental; J. E. B. Smith, Guy's; C. R. Smitheringale, Royal Dental; L. Smuts, London; M. R. Somers, Royal Dental; E. L. Sprong, Guy's; F. J. Stay, H. C. Steyn, H. P. Sutcliffe, Janet H. M. Sutherland, D. R. Sutton, and L. A. Trace, Royal Dental; J. L. T. Urquhart and F. N. Van der Pant, Guy's; and I. M. van Dockum, V. M. Wallis, J. W. Watts, H. J. V. Webster, and S. Winer, Royal Dental.

The following were elected examiners:—

Board of Examiners for the Fellowship: Mr. W. Wright, London Hospital. Second Examination of the Conjoint Board: Mr. H. A. Harris. Final Examination of the Conjoint Board, Midwifery: Dr. D. W. Roy.

A letter was read from Mr. F. F. Burghard, King's College Hospital, resigning his membership of the Court of Examiners.—The President reported that a vacancy would be occasioned by the retirement of Mr. Norman Bennett from the Board of Examiners in Dental Surgery.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.—Dr. T. W. Naylor Barlow, of Wallasey, has been elected president of the society for the session 1923–24. He will be installed on Oct. 19th, and will preside at the annual dinner of the society on the evening of the same day.

LONDON HOSPITAL MEDICAL COLLEGE.—A lecture on the Stomach from the Radiologist's Standpoint will be given by Dr. G. E. Vilvandré on June 28th, at 4.15 P.M., in the Anatomical Theatre of the College. The lecture is intended for senior students of the hospital and post-graduates.

PADDINGTON TUBERCULOSIS DISPENSARY.—The annual meeting will be held at the Town Hall, Paddington, on Monday, June 25th, at 8.30 P.M. The Mayor of Paddington will preside and Sir Robert Philip will be the principal speaker. After the business of the meeting has been transacted a film entitled the Story of John McNiell will be shown.

NATIONAL COUNCIL OF TRAINED NURSES OF GREAT BRITAIN AND IRELAND.—At a meeting held at the club of the Royal British Nurses' Association, 194, Queen's-gate, London, S.W., on June 14th, a presentation was made to Mrs. Bedford Fenwick, President of the Council, of a bound and inscribed copy of the first Statutory Register of Nurses, in recognition of her services to the nursing profession.

SOCIETY FOR THE PREVENTION OF VENEREAL DISEASE.—A meeting of the Executive Committee of this society was held on June 14th under the chairmanship of Lord Willoughby de Broke. The following resolution was carried unanimously:—

"That the Executive Committee accepts the Trevethin Report as a document supporting the essentials of the policy of the Society for the Prevention of Venereal Disease, as defined in their policy pamphlet, and especially welcomes the recommendation 'that the law should be altered so as to permit properly qualified chemists to sell ad hoc disinfectants, provided such disinfectants are sold in a form approved, and with instructions for use approved by some competent authority,' as set forth in Clause 14 of the Report."

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—General refresher courses and special courses in cardiology, children's diseases, dermatology, and ophthalmology have been arranged by the Fellowship of Medicine during July and August. Copies of the syllabus of each course and tickets of admission can be obtained from the secretary to the Fellowship of Medicine, at 1, Wimpole-street, London, W. The special course in neurology, to be given at the West-End Hospital for Nervous Diseases from June 25th to July 27th, will include clinical work in the out-patient department and special lecture-demonstrations dealing with the diagnosis and treatment of common nervous disorders.

EPSOM COLLEGE: "FRANCE" PENSIONS.—The Council will shortly award several "France" pensions of £30 a year to medical men. Candidates must be not less than 55 years of age, and their income, independent of any allowance from the College, must not exceed £100 a year. The Council will also award one "Grewcock" pension of £50 a year. In this case there is no limitation as to age, but candidates must be legally qualified medical men who have retired from professional work, and who, in the opinion of the Council, are in need of the pension. There is the same income-limit as in the case of "France" pensioners, and special consideration will be given to the claims of candidates having association with Worcestershire, Lincolnshire, or Carmarthenshire. Forms of application can be obtained from the secretary, Mr. J. B. Lamb, 49, Bedford-square, London, W.C. 1.

ROYAL LONDON OPHTHALMIC HOSPITAL.—It has been decided that women shall be eligible for election to the Committee of Management, and Lady Cooper and Lady Lister have been duly elected to serve as members of the committee.

THE LATE DR. F. P. FERRAN.—The death took place last week of Dr. F. P. Ferran, who was at the time a prisoner in the internment camp at the Curragh. Death was due to pneumonia. He was a native of the North of Ireland, and was educated at Queen's University, Belfast, where he took his medical degrees in 1910. He was medical officer of Foxford, county Mayo, and a member of Dail Eirann for the united constituency of Sligo and East Mayo. He voted against the Treaty, and was believed to have taken an active part in hostilities on the Republican side.

CREMATION SOCIETY.—The Transactions of the Cremation Society of England, No. XXXIV., is an important document, containing not only the report of the council and the balance-sheet but the proceedings of a conference of cremation authorities presided over by Sir Malcolm Morris at the Guildhall, London, on Oct. 26th, 1922. Among the questions discussed at this conference were the substitution of cremation for burial, the best means of spreading information on the subject, and the doctor's fee for the medical certificate. As Dr. Chalmers Mitchell forcibly pointed out at this conference, "The dead are very much more numerous than the living, and every year they are getting more and more numerous, and the living cannot afford the present arrangements." During 1922 the number of cremations which took place in Great Britain was 2009, or 87 more than in 1921, but in the provinces there has been a decrease. The Transactions also contain notes on various cremation societies, a list of British crematoria, the steps to be taken in order to arrange for cremation, and other useful information, and is published at the offices of the society, 52, New Cavendish-street, London, W. 1 (price 1*s.* 6*d.* post free to non-subscribers).

ST. THOMAS'S HOSPITAL: NEW LABORATORY.—On the occasion of the prize distribution on June 13th the new laboratory, the gift of the Dunn trustees to the hospital, was declared open by the Marquis of Cambridge. During the proceedings Sir Walter Fletcher, F.R.S., gave a description of the laboratory, and spoke of the work done in the former laboratories, particularly that valuable work relating to trench nephritis which had proved so useful during the war and in relation to the results of kidney disease generally. Another more recent development of the same work had notably increased the safety of certain kinds of surgical operation; at the present time the biochemical laboratory was engaged in chemical work which the insulin treatment of diabetes rendered necessary. The work of the biochemical laboratory was, however, hampered by an artificial regulation whereby animal experiments might be performed in the medical college, but not in the hospital. Sir Jeremiah Colman, on behalf of the Dunn trustees, asked acceptance of the laboratory. He explained that Sir William Dunn, a successful South African merchant, had appointed the directors of the Commercial Union Insurance Company to distribute the trust money. This money was now either exhausted or ear-marked, but he wished the hospital to accept a further £5000 for scientific instruments. Sir Arthur Stanley, treasurer, cordially accepted the gifts on behalf of the hospital.

LIVINGSTONE COLLEGE, LEYTONSTONE.—Commemoration day was held at the college on June 13th, Sir Leonard Rogers, F.R.S., being in the chair. Short statements were made by the Principal, Dr. Tom Jays, and the Treasurer, Mr. R. L. Barclay, as to the work of the past year, and the financial position of the college, it being pointed out that if a sufficient number of students were sent to the college regularly there would be no need to appeal to friends for financial support. An urgent appeal was necessary, however, in order to enable the work to be carried on until the number of students should be so increased as to make the college self-supporting. About £500 is needed before the end of the current financial year. Sir Leonard Rogers said that he felt the work of Livingstone College was more needed than ever at the present time, owing to the shortage of medical men and women working in the mission field. To his mind the most important work of Livingstone College was to train these missionaries in looking after their own health when they went out to distant parts of the Empire, where they often lived far from medical aid, and for want of the knowledge they could gain in a few months they often sacrificed health. "Another great feature of this work," he said, "is that all those who go through the training here are able to treat a large proportion of the ailments of these people and able to show the Gospel to them in a way they could not otherwise do." Sir Leonard Rogers referred particularly to leprosy; he felt strongly that if missionaries who were going out to work amongst lepers were sent to be trained at the college it would be very beneficial in helping to carry out the cure of leprosy. He spoke of the problem of segregation and prophylaxis, and the difficulties in carrying out these measures. When that could be done an enormous advance would be made. Mr. J. M. Brand, an old student of the college, who has been working in South India as a missionary of the Strict Baptist Mission, described the benefit of the training, as regards the ability given to missionaries to take care of themselves and of their native workers in unhealthy places and as regards the confidence with which it enabled them to go about pioneer work. Mr. T. L. Suffill, another former student, now of the Sudan United Mission, home on furlough from Nigeria, also told of the great value of the knowledge he had gained as a student at the college.

THE LATE MR. A. MCDONNELL.—Mr. Alexander McDonnell, who died on June 14th, was medical officer of Stamford Hill and St. Michael's Maternity and of the Stoke Newington District Post Office, and well known as a practitioner in the North of London. He qualified L.S.A. in 1884 and took the L.R.C.S. Edin. and L.M. in the following year. He was President of the Four Provinces of Ireland Club.

CANCER CHARITY, MIDDLESEX HOSPITAL.—The report of this charity for the year 1922 shows that at the beginning of the year 76 patients were under treatment in the wards, while during the 12 months 513 patients were admitted and 86 remained at the end of that period. In the previous year the number of admissions were 505. The average daily bed occupancy was 86·13 as compared with 85·74 for 1921, and the average length of stay was 62·37 days as compared with 60·65 in the previous year. Each in-patient cost on an average £4 4*s.* per week, a decrease of about 3*s.* 6*d.* in the previous year's average. In the out-patient department there were 191 new cases treated and the attendances numbered 708. In 1921 the figures were respectively 234 and 789. The average cost for each out-patient was £1 2*s.* 4*d.*, the cost during 1921 being 19*s.* 2*d.* The income and expenditure account shows an increase of £428 in the ordinary income (from £15,758 to £16,186), while the extraordinary income which included special grants from the Voluntary Hospitals' Commission and preliminary grants from Combined Appeal Fund rose from £2850 to £4437. The subscriptions for 1922 amounted to £1530 as compared with £1191 in 1921.

IRISH FREE STATE ARMY MEDICAL SERVICE.—Our Dublin Correspondent writes: Until the recent statement made by General Mulcahy, Minister of Defence, regarding the Army Medical Service, no public information had been given as to the amount of control exercised by the Army medical authorities in the matter of appointments to the Army Medical Service. There had been some uneasiness lest political considerations were being allowed to weigh against professional competence. General Mulcahy's statement, however, was thoroughly reassuring. He said that the Director of Medical Services was appointed by the Minister, and was solely responsible for the efficiency of the Service. All appointments were made with Ministerial sanction on the Director's recommendation. General Mulcahy, giving further details regarding the Army Medical Service, stated that the commissioned ranks at present consisted of 86 lieutenants, 45 other commissioned officers, 15 probationers, 17 dentists, and 30 nurses, together with the headquarters' establishment. The Minister took the opportunity of expressing the gratitude of the Government to Dr. Maurice Hayes for his admirable work in organising a medical service with great rapidity in a time of exceptional difficulty.

MEDICAL GOLFING SOCIETY.—The annual summer meeting was held at Addington Golf Club on June 14th. Over 90 members competed for various prizes, all competitions being against bogey. H. D. Gillies (+2) won THE LANCET Challenge Cup and memento for the best scratch return (4 up); also the Henry Morris Challenge Cup and society's gold medal for best handicap return with 2 up. Other results were as follows:—Class 1: Handicaps 9 and under. 1st prize, Sir Richard Cruise (2), 1 up (H. D. Gillies with return of 2 up being ineligible for this prize). 2nd prize, Jocelyn Swan (6), G. Dawson (4), Gordon Lane (9), Sir K. Goadby (8), tied with all square. Best last 9 holes: Sir K. Goadby and Gordon Lane, tied with all square. Class 2: Handicaps 10 and over. 1st prize, C. M. Hinds-Howell (10), J. Cunning (12), N. B. Benjafield (16), H. L. Hatch (15), J. Clarke (14), tied with all square. Best last 9 holes: J. E. Coulson (11), L. Bathurst (11), tied with 1 up. Foursome sweepstakes: 1st prize, Bruce Hamilton (12), and G. A. Sutherland (6). 2nd prize, Sir R. Cruise and Gordon Lane tied with C. R. Salisbury (16) and C. H. Housden (18), and with J. S. H. Lewis (8) and Murray Thomson (10). All ties will be played off in due course.

WE regret to announce the death on June 19th of Dr. Walter d'Este Emery, soon after his retirement from his position of Director of Laboratories at King's College Hospital.

Joseph Harvey Kemp Sykes, L.M.S.S.A., has been made an Honorary Associate of the Order of St. John of Jerusalem.

POOR-LAW MEDICAL OFFICERS' ASSOCIATION.—The annual meeting will be held at 1, Upper Montague-street, London, W.C. 1, on Thursday, June 28th, at 4.15 P.M., Sir Arthur Newsholme, the President, in the chair.

CALEDONIAN MEDICAL SOCIETY.—The thirty-eighth annual meeting will be held in the Aberdeen Medico-Chirurgical Society's Hall on Friday, June 29th, at 2.30 P.M., under the presidency of Dr. David Rorie. The annual dinner will take place the same evening at the Palace Hotel, Aberdeen.

SMALL-POX IN ENGLAND AND WALES.—During the week ending June 9th 58 cases of small-pox were notified in England and Wales, the distribution being as follows: Derbyshire 6 (Heanor 5; Clown R.D. 1), Durham 4 (Stockton-on-Tees), Gloucestershire 35 (Gloucester 26, Cheltenham 1, Cirencester 1, Stroud 1, East Dean R.D. 1, Lydney R.D. 1, Stroud R.D. 4), Nottinghamshire 4 (Nottingham 1; Basford R.D. 3), Yorks North Riding 2 (Middlesbrough), Yorks West Riding 2 (Doncaster R.D.), Glamorgan 5 (Cardiff). Since then, apart from the epidemic in Gloucestershire and environs, 10 new cases are reported from Middlesbrough.

DEATH OF MR. CLAYTON FOX.—We regret to announce the death, which occurred suddenly on June 13th from heart failure, of Mr. Hugh Clayton Fox, F.R.C.S.I. For many years assistant surgeon to the Metropolitan Ear, Nose, and Throat Hospital, he was at the time of his death aural surgeon in the Ministry of Pensions and chief assistant in the throat department of the Brompton Hospital for Consumption. A student of the Middlesex and Charing Cross Hospitals, Mr. Fox qualified in 1888, taking his F.R.C.S.I. some years later. He published in 1919 a translation of Dr. Georges Laurens's "Oto-Rhino-Laryngology," a book famous for its excellent elementary teaching, and a second edition was soon demanded. His special interest was in tinnitus aurium. A man of handsome presence and courteous manner, his colleagues and many friends will deplore his sudden and untimely end.

OXFORD OPHTHALMOLOGICAL CONGRESS. — The fourteenth annual meeting of the Congress will take place on July 5th, 6th, and 7th. On July 5th, at 10 A.M., in the Department of Human Anatomy of the University Museum, the Congress will be opened by the Master, Mr. Sydney Stephenson, and a discussion on the Relationship of Dental Sepsis to Diseases of the Eye will then be opened by Mr. W. R. Ackland (Bristol) and Mr. W. Lang (London). The following will take part in the discussion: Dr. T. Harrison Butler (Leamington Spa), Prof. J. Van der Hoeve (Leiden), Dr. S. Lewis Ziegler (Philadelphia), Mr. P. H. Adams (Oxford), Dr. Harold Gifford (Omaha), Mr. N. C. Ridley (Leicester), and Miss M. Gilchrist (Glasgow). The annual general meeting will be held at the conclusion of the discussion. At 2.30 P.M. papers will be read by Lieut.-Colonel H. H. Herbert (Hove) on the Pectinate Ligament and its Connexions; Dr. C. F. Bentzen (Copenhagen) on the Making of the Conjunctival Flap in Elliot's Operation; Dr. H. Gjessing (Drammen) on Clinical Examination of Fistulæ or Filtering Scars after some operations—especially after Holth's iridencleisis with iridotomy; Dr. Harrison Butler on the Organisation of Ophthalmic Clinics and Hospitals. The annual dinner of the Congress, at 7.45 P.M., will be held in the Hall of Keble College.—On July 6th, at 10 A.M., in the Department of Human Anatomy, Dr. Sanford R. Gifford (Omaha) will speak on Intra-cisternal Injections in the Treatment of Luetic Optic Atrophy, followed by Dr. K. Lundsgaard (Copenhagen) on Finsen Treatment of Conjunctival Diseases. At 11 A.M. the Doyne Memorial Lecture will be delivered by Mr. H. Moss Traquair on the Differential Characters of Scotomata and their Interpretation. At 12.15 P.M. Prof. J. Van der Hoeve will offer Further Observations on Eye Symptoms in Tuberose Sclerosis and in Recklinghausen's Disease. At 2.30 P.M. Mr. Rayner D. Batten (London) will discuss (1) the Importance of Fundus Drawings in Clinical Ophthalmology, with Illustrations from Studies of Diseases of the Macula; (2) the Education and Training of Ophthalmic Draughtsmen. Mr. John D. Batten (London) will contribute a paper on Memory Drawing in Relation to Ophthalmic Drawing, and Prof. Van der Hoeve and Dr. Harrison Butler will speak on Accommodation and on Muscle Recession and Muscle Tucking respectively. At 5.30 P.M. a visit will be paid to the Pitt Rivers Museum.—On July 7th, at 10 A.M., in the Department of Human Anatomy, Mr. R. J. Coulter (Newport, Mon.) will open a discussion on the Diagnosis of Coal-miners' Nystagmus, and Dr. T. Stewart Barrie (Glasgow) will contribute a paper on Colour Vision in Amblyopic Eyes Associated with Strabismus Convergens. In the Scientific Museum Dr. S. Lewis Ziegler (Philadelphia) will demonstrate the Use of the Prism Scale to Neutralise and Centre Spectacle Lenses. The Commercial Museum will be open from 9.15 A.M. daily.

SCOTTISH SOCIETY OF ANÆSTHETISTS.—The annual meeting was held in the hall of the Faculty of Physicians and Surgeons on May 26th, the President, Dr. D. Lamb, being in the chair. The Society considered and adopted a report from the executive committee on the question of the present remuneration and status of specialists in anæsthetics in Scotland. The report shows that the fees in Scotland are at present much below those paid in London and compare unfavourably even with those usual in English provincial centres. Emphasis is laid especially on the following points: 1. At the request of surgeons, anæsthetists frequently reduce their fee to suit the pocket of the poorer private patients in exactly the same spirit as the surgeons themselves do. To this they have no objection, but unfortunately it seems to be a general experience among anæsthetists that what may be termed their standard fee for an administration of average gravity in a patient of ordinary means has come to be looked upon as a maximum to be exceeded upon very rare occasions. It is certain that a considerable number of patients are charged an anæsthetic fee which is too small in comparison with the other expenses associated with the operation. 2. The remuneration paid even to anæsthetists of special experience and acknowledged standing is little if any greater than that accorded to the surgeon's assistant, who is usually a man of junior standing and only at the beginning of his career. 3. In the teaching hospitals, also, the present status accorded to the specialist in anæsthetics shows too little recognition of his responsibility and of his special training and experience. 4. The developments of modern surgery are such as to require the services of the properly trained and fully responsible anæsthetist, and it is felt that neither in respect of status nor remuneration do the present conditions give recognition and encouragement to good and sustained work. For the making of a good anæsthetist, natural aptitude, proper study, and prolonged hospital experience are all necessary, and unless those who devote themselves to the subject can look forward to reasonable prospects, the progress of the science and practice of anæsthesia must suffer. The Society recognises that any attempt to lay down rigid rules and scales of remuneration is not in accordance with the spirit of the profession. The individual specialist in anæsthetics must charge for his services in accordance with his own standing. It was hoped, however, that publication of the views of the Society may be of value in bringing before the profession the unsatisfactory nature of the present position.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg.-Comdr. A. C. Bean has been placed on Retd. List with the rank of Surg. Capt.

ROYAL ARMY MEDICAL CORPS.

Capt. W. Fotheringham retires receiving a gratuity.

Lt. P. L. C. Carrier to be Capt.

Temp. Capt. R. B. Bryan relinquishes his commn. and retains the rank of Capt.

TERRITORIAL ARMY.

Majs. J. V. Bates (late R.A.M.C.) and G. M. Miller (late R.A.M.C.) to be Capts. and relinquish their rank of Maj.

Capt. W. L. M. Gabriel (late R.A.M.C., S.R.) to be Capt.

Capt. H. W. Bruce resigns his commn. and is granted the rank of Lt.-Col.

Capt. C. A. Sampson relinquishes his commn. and retains the rank of Capt.

Capt. C. S. Wink to be Maj.

Surg.-Comdr. A. La Touche Darley, R.N. (ret.) to be Maj.

K. S. Roden to be Lt.

Capt. R. M. Handfield-Jones to be Maj.

TERRITORIAL ARMY RESERVE.

Capt. D. O. Macdonald, from General List, to be Capt.

Maj.-Gen. J. Jackson, C.I.E., I.M.S., and Col. W. H. Ogilvie, C.B., C.M.G., I.M.S., have been appointed Hon. Physicians to the King, Indian Military Forces; and Col. R. Heard, I.M.S., has been appointed Hon. Surgeon to the King, Indian Military Forces.

Parliamentary Intelligence.

HOUSE OF COMMONS.

WEDNESDAY, JUNE 13TH.

Advertisements on Medical Certificates.

Mr. BRUFORD asked the Minister of Health whether he was aware that the backs of medical certificates issued in connexion with national health insurance were used to advertise articles of diet sold by a certain company; and, in view of the undesirability that medical men should be compelled to distribute certificates bearing what might easily be misconstrued by patients as being their doctor's recommendation of particular foods or drinks, would he exclude advertisements of this type.

Similar questions on the same subject were asked by Dr. WATTS, Mr. W. ADAMSON, Dr. SALTER, and Mr. LEACH.—Mr. NEVILLE CHAMBERLAIN replied: The considerations which led the Government to sanction the printing of advertisements on the back of this form were explained by the Paymaster-General in reply to Mr. J. H. Thomas on May 16th. Representations have been received that the advertisement of foods is open to objection, and I will consult the Stationery Office as to the possibility of securing other advertisements without loss of revenue when the present contract terminates, if there should then still be room for advertisements on the forms.

Lieut.-Commander KENWORTHY asked the Minister of Health whether he would state what revenue was expected to be derived in a year by utilising the back of the medical certificates, granted in connexion with the national health insurance, for advertising purposes; particularly what revenue was derived from the advertising on the back of the special intermediate certificates form med. 40b (revised); and whether he had had any expressions of disapproval of this practice from the medical profession.—Sir W. JOYNSON-HICKS (Financial Secretary to the Treasury) replied: The revenue from advertisements on the various medical certificates is estimated at £405 per annum (including £270 per annum from form med. 40b), and this sum is one of a large number of items of receipts for advertisements on Government publications (other than the Telephone Directory), which it is hoped will amount to about £30,000 for the current financial year. The answer to the last part of the question is in the affirmative.

Small-pox in Derbyshire.

Mr. FRANK LEE asked the Minister of Health whether his attention had been drawn to an expression of opinion by the medical officer of health for Chesterfield that the outbreak of disease in Clown, Bolsover, Ilkeston, and other places in Derbyshire, of recent date, which had been notified as one of small-pox, was not due to that complaint, seeing that its effects had none of the usual characteristics of face disfigurement and that no death had occurred in consequence; and would he institute further inquiry with a view to a correct and definite diagnosis being reached.—Mr. NEVILLE CHAMBERLAIN replied: I assume that the hon. Member is referring to certain statements which appear in the annual report of the medical officer of health of Chesterfield for the year 1922. If so, I may point out that in that report the medical officer acknowledges that his view is shared by only a very small minority. As regards the second part of the question, I may say that when similar statements were made last year an expert committee was appointed by my predecessor to examine certain patients in Chesterfield and elsewhere who had been notified as suffering from small-pox. This committee arrived at the conclusion that the disease was in fact small-pox of a mild type, a conclusion which is supported by subsequent investigations undertaken by medical officers of my department.

The Labelling of Dried Milks.

Mr. HURD asked the Minister of Health whether he was aware that skimmed dried milk was now being sold in this country with no sufficient indication that it was unfit for children as is required in the case of condensed milk; and whether he would enlarge the regulations under the Milk and Dairies Act of 1922 to cover this development.—Mr. NEVILLE CHAMBERLAIN replied: The answer to the first part of the question is in the affirmative. As I have already announced, I am considering regulations to provide for the proper labelling of dried milks.

Ex-Officers and Medical Boards.

Captain O'GRADY asked the Minister of Pensions whether the medical boards for ex-officers were held at regional headquarters; whether treatment was provided by regional medical officers; and whether it was proposed to transfer the officers' awards to the regional awards sections.—Captain CRAIG replied: Medical boards for ex-officers are held at regional headquarters and other convenient centres in the provinces. Arrangements for providing treatment for ex-officers in the provinces are made by regional medical officers. It is not proposed to transfer the officers' awards to the regional offices. The Departmental Committee over which my right hon friend presided in 1920 recommended the continuance of the centralised system of officers' awards.

National Health Insurance Act.

Mr. WILLIAM M. ADAMSON asked the Minister of Health whether he intended to renew the National Health Insurance (Prolongation of Insurance) Act for the year 1924.—Mr. NEVILLE CHAMBERLAIN replied: Yes, Sir.

Disinfectants and Venereal Disease.

Mr. PETO asked the Secretary of State for the Home Department whether his attention had been called to the Report of the Committee of Inquiry on Venereal Disease; and whether he intended to introduce legislation during the present session to give effect to their recommendation to permit properly qualified chemists to sell appropriate disinfectants.—Mr. NEVILLE CHAMBERLAIN replied: The report of this committee is under consideration, and I am not yet in a position to announce what action will be taken upon their recommendations. I may add as regards the second part of the question that I am advised that there is nothing in the existing law to prevent chemists selling disinfectants for purposes of prevention of any venereal disease so long as they are not sold accompanied by any written or printed recommendations.

Manufacture of Morphia and Heroin.

Captain JOHN HAY asked the Secretary of State for the Home Department the number of factories in Great Britain where morphia and heroin are made; the amount of these drugs manufactured last year (1922); and the quantity sent abroad.—Mr. BRIDGEMAN replied: The number of factories licensed at the present time for the manufacture of morphine and heroin is two. The amount of morphine made in 1922 was 315,342 oz., of which, however, 173,010 oz. were converted into codeine or heroin, leaving a net total of 142,332 oz. The amount exported was 115,465 oz. The amount of heroin made in 1922 was 31,673 oz., and the amount exported 25,911 oz.

Nurses' Registration.

Dr. CHAPPLE moved an humble address to His Majesty praying that the rule made by the Minister of Health on May 23rd under the Nurses' Registration Act, 1919, should be modified so as to permit of the registration of nurses who have not had hospital training, but who produce certain certificates testifying to their character, to their nursing ability, and to their having completed three years' nursing practice prior to Nov. 1st, 1919.

Lieut.-Colonel FREMANTLE said he wished to give the reason why he differed from his professional colleagues who were supporting the motion before the House. If Parliament had decided on a democratic constitution for the nursing profession and that constitution was represented by the present General Nursing Council, who had clearly declared that it was impossible for them to recognise as satisfactory such bona fide nurses as would come in after the year 1910, the House could not possibly pass the proposal before them.

Mr. NEVILLE CHAMBERLAIN (Minister of Health), who later announced that the Government whips would be taken off for the division, said that he thought that Dr. Chapple's proposal went too far, but he would be willing to accept as a fair compromise a motion in the name of Colonel Fremantle which would bring on to the register nurses who were engaged in nursing on Nov. 1st, 1919, and who were also bona fide engaged in nursing prior to Jan. 1st, 1910.

Dr. Chapple's motion was carried by 111 votes to 81, and Colonel Fremantle's address and another in the name of Major Barnett were ruled out of order in consequence.

THURSDAY, JUNE 14TH.

The Fire at the Birmingham Pensioners' Hospital.

Mr. AUSTEN CHAMBERLAIN asked the Minister of Pensions if he had any information with reference to the fire which took place on the previous day at the pensioners' hospital at Highbury, how the injured were progressing, and what provision would be made for the dependents of those who had lost their lives.—Mr. W. M. ADAMSON asked a similar question.—Major TRYON replied: I have received a full report of this distressing fatality from one of my medical officers whom I sent to Birmingham last night immediately on receipt of the news. The hospital is not one which is owned by the Ministry, but has been made available for its exclusive use by special agreement with the Birmingham Pensions Hospital Committee, which is responsible for the administration. The fire took place in an isolated open-air ward shortly after 2 o'clock yesterday afternoon. The cause of it is still quite obscure. It originated in a small room at one end of the ward and the outbreak was at once observed

by the orderly on duty who, assisted by a patient, immediately attempted to deal with it, and gave the alarm. The fire brigade arrived in about five minutes. In the meantime practically the whole staff of the hospital had arrived on the scene and, together with all patients who were fit to do so, endeavoured to put out the flames and to remove the helpless patients from the ward. The fire, however, spread rapidly, aided by the gale of wind which was blowing at the time, and even before the fire brigade had arrived the position of the patients had become a matter of the utmost difficulty and danger. The rescue work was carried out at the cost of considerable injuries to some individuals, and the behaviour of all concerned calls for the highest praise. The ward was an open-air hut of the most modern type, such as is extensively used in this and other countries for the treatment of severe and often hopeless cases of tuberculosis and other diseases requiring ample access to sun and air. It was of wooden construction on a brick foundation with a galvanised iron roof. There were two exits; one was at the end of the hut, where the fire started, and was at once rendered inaccessible. The other was an opening 9 ft. wide in one side of the hut, through which two beds could simultaneously be removed. There were thus ample opportunities for exit in any normal emergency. There were in the ward nine full water buckets and two fire extinguishers. The number of patients in the ward at the time of the outbreak was 15, of whom only three could help themselves. In addition to the two patients who unfortunately lost their lives there were two who were seriously injured. I am glad to learn from further inquiries which I made this morning that they are going on well, though not yet out of danger. Other injured patients and members of the staff are progressing satisfactorily. I wish to express my sincere sympathy with the relatives of the men who have died and with those who have been injured. The House may rest assured that the claims of the dependents of those who have lost their lives will be generously and sympathetically dealt with. On the question raised by the hon. Member for Cannock, full inquiry will be made into all the circumstances, including the suitability of this type of building.

Pensions Nursing Service.

Mr. MURNIN asked the Minister of Pensions what were the numbers and grades of the Ministry nursing service employed at headquarters; what were their duties; and whether he would consider transferring these duties to the regional commissioners of medical services and the medical superintendents of Ministry institutions.—Major TRYON replied: The only members of the Ministry nursing service employed at headquarters are the matron-in-chief and the principal matron, who are engaged in the general supervision and coördination of the work of the whole nursing service. I am not prepared to accept the suggestion in the last part of the question, which I do not consider would be in the interests of either economy or efficiency.

Shepherd's Bush Orthopædic Hospital.

Major COHEN asked the Minister of Pensions whether the Orthopædic Hospital at Ducane-road, Shepherd's Bush, had to be closed down at the end of the year; and, if so, what steps the Ministry were taking to provide for the present patients the specialist treatment needed by them.—Major TRYON replied: The lease on which these premises are held expires at the end of the present year, and arrangements are being made for the accommodation of the patients by an extension of the facilities at Roehampton.

Panel Treatment for Service Pensioners.

Mr. EDWARDS asked the Minister of Pensions whether he was aware that ex-Service men who applied for treatment were told that treatment was necessary but that their panel doctor would prescribe for them; and would he make arrangements so that when treatment was necessary it could be given under the pensions scheme, and that it should carry with it treatment allowance.—Major TRYON replied: Under the terms of the Royal Warrant my department is only empowered to defray the expenses in respect of treatment which is not otherwise provided. Whether treatment is provided at the direct cost of the Ministry or whether it is provided by the man's insurance practitioner, treatment allowances are paid if it is certified that the man, as a consequence of having to undergo treatment, will, during treatment, be unable to work at a remunerative occupation.

India and Opium Control.

Mr. PONSONBY asked the Under-Secretary of State for India whether the representatives of the Government of India on the Advisory Committee on Opium of the League of Nations made any reservations in accepting the American principles with regard to the interpretation of The Hague Opium Convention; and, if so, for what reason did the Government of India adopt a different attitude from that of the other delegates, who accepted the principles without reservation.—Earl WINTERTON replied: The hon. Member is mistaken in supposing that the American principles met with unanimous acceptance from all countries except the Indian Government. Certain other countries made a reservation regarding the use of opium prepared for smoking. The Indian reservation was to the effect that the use of raw opium according to the established practice in India, and its production for such use, are not illegitimate under the Convention. The reason for this is the fact that insistence on a medical prescription to enable raw opium to be used for medical or quasi-medical purposes would be impracticable in India.

Lead Poisoning among Painters and Plumbers.

Mr. ARTHUR GREENWOOD asked the Secretary of State for the Home Department whether he was aware that of the eight cases of lead poisoning among house painters and plumbers which came to the knowledge of the Home Office during April six were fatal; and whether, in view of these facts, he would urge upon the Government the importance of ratifying the white lead convention as recommended by the Norman Committee.—Mr. BRIDGEMAN replied: The question of ratifying the convention is receiving careful consideration.

Terms and Duties of Panel Doctors.

Sir KINGSLEY WOOD asked the Prime Minister whether before any revision was made in the terms and duties of doctors on the panel lists an opportunity would be afforded to the House of discussing the matter.—Lord E. PERCY replied: The Government cannot at this stage undertake that, when a settlement has been reached with the doctors, an opportunity will be given for the discussion of the new agreement before it comes into operation, but even if no express legislation is necessary Parliament will have an early opportunity for reviewing the terms of the agreement next session on the Vote on Account.

Cannock Chase Pensions Hospital.

Mr. ADAMSON asked the Minister of Pensions whether it had actually been decided to close the pensions hospital on Cannock Chase, and, if so, whether he would state the reasons for adopting this policy in view of the large expenditure incurred in building and equipment.—Major TRYON replied: Owing to the decreasing requirements for hospital accommodation in the Midlands arrangements have been made for the gradual closing of this hospital.

FRIDAY, JUNE 15TH.

Children in Workhouses.

Mr. CHARLES ROBERTS asked the Minister of Health the number of children over 3 years of age who on Jan. 1st, 1923, were being maintained in workhouses, workhouse infirmaries, sick wards of workhouses, wards for mental deficients, and other wards respectively.—Mr. NEVILLE CHAMBERLAIN replied: The figures are as follows:—

—	Suffering from sickness, accident, or bodily infirmity.	Suffering from mental infirmity.	Not suffering from sickness, accident, or bodily or mental infirmity.	Total children between 3 and 16 in specified institutions.
Separate institutions for sick persons suffering from disease of body or mind—				
Infirmaries	4,753	157	28	4,938
Institutions solely for mental cases ..	—	1,118	—	1,118
Institutions administered under the Poor-law Institutions Order, 1913—				
Sick wards	2,293	157	29	2,479
Separate wards of children	—	—	1,466	3,023
Other wards	62	399	1,096	
	7,108	1,831	2,619	11,558

The above figures do not include (*a*) children in separate establishments for children, or (*b*) children in institutions not provided by Poor-law authorities.

Small-pox in Gloucestershire.

Sir WALTER PRESTON asked the Minister of Health whether the official employed by the Gloucester medical officer to distemper houses where small-pox had occurred had himself contracted the disease, and when this official was last vaccinated.—Mr. NEVILLE CHAMBERLAIN replied: I have made inquiries of the local authority and am informed that no official employed to distemper houses where small-pox has recently occurred in Gloucester has since contracted the disease.

Sir WALTER PRESTON asked the Minister of Health how many cases of small-pox there had been in Gloucestershire

in January, February, March, April, and May of this year, and whether any special steps had been taken to cope with the disease in Gloucestershire.—Mr. NEVILLE CHAMBERLAIN replied: The numbers of cases of small-pox which have been notified in Gloucestershire, including the city of Gloucester, during these months have been as follows: January, nil; February, nil; March, 8; April, 25; and May, 31. There is, however, evidence to show that many cases have occurred in the city of Gloucester during the past two months which have not been recognised as small-pox by the medical officer of health and have not been notified. Special visits have been paid by medical officers of my department to the districts in which the disease has occurred, in order to assist and advise the local authorities and their officers. In the case of Gloucester, two of these medical officers have at the request of the local authority assisted in the diagnosis of cases and in the organisation of suitable measures to meet the emergency, and these officers discovered a number of cases which had been incorrectly diagnosed or overlooked. I have since caused a communication to be sent to the local authority recommending the several special steps which should be taken to deal with the outbreak, and I understand that effect is being given to these recommendations.

MONDAY, JUNE 18TH.

Notification of Tuberculosis in Cattle.

Mr. ADAMS asked the Minister of Agriculture whether he would re-introduce the Tuberculosis Order of 1914, or one having similar effect, in which tuberculosis in cattle was made a notifiable disease; and whether he would promote a measure to compel all county authorities and the larger cities or combinations of smaller authorities to appoint whole-time veterinary officers, and to compel the application of regular veterinary inspection of cattle, particularly dairy herds, throughout the country, such officers to be also responsible for the inspection of meat in the districts concerned, and if need be to set up veterinary departments for this purpose, as in certain of the larger local authorities of the kingdom.—Sir R. SANDERS replied: Unless and until I am assured that a majority of local authorities, including counties and cities, are in favour of the re-introduction of the Tuberculosis Order of 1914, I do not see my way to re-issue this Order in view of the very considerable expenditure involved not only to my department but also from local funds. With regard to the second part of the question, I would remind the hon. Member that Section 1 of the Milk and Dairies (Amendment) Act, 1922, deferred until Sept. 1st, 1925, the operation of Section 10 of the Milk and Dairies (Consolidation) Act, 1915, which contemplated the appointment of veterinary inspectors by local authorities for purposes similar to those suggested in the question.

Nurses' Registration in Scotland.

Dr. CHAPPLE asked the Under Secretary to the Scottish Board of Health whether existing nurses practising in Scotland would be eligible to take advantage of the decision of this House with regard to nurses' registration on June 13th.—Captain ELLIOT replied: The decision referred to does not apply to the rules of the General Nursing Council for Scotland. So far as the Scottish register is concerned, therefore, the answer is in the negative. As regards the position of nurses practising in Scotland in relation to the English register the matter is one for the General Nursing Council for England and Wales.

TUESDAY, JUNE 19TH.

Small-pox and Official Reports.

Mr. BROMFIELD asked the Minister of Health whether he would direct medical officers of health to record in their future annual reports the number of cases of small-pox and other infectious diseases notified from families living in houses or tenements containing one room, two rooms, three rooms, four rooms, and five or more rooms, respectively.—Mr. NEVILLE CHAMBERLAIN replied: I will consider this suggestion in connexion with the preparation of the next circular on the subject of the annual reports of medical officers of health.

PRESENTATION TO A MEDICAL MAN.—On June 11th, in the town hall at Wallasey, Dr. Bouverie McDonald, first Member of Parliament for Wallasey when it became a Parliamentary borough, was presented with his portrait in oils, which will be hung in the civic gallery. The portrait has been painted by Mr. J. A. A. Berrie, A.R.C.A., and the presentation was made by Mr. J. T. Chester, the first mayor. Mr. W. H. Robinson, the Charter Mayor, who presided, said the presentation was made the more pleasant because all sections of political opinion in the borough were associated with it. Dr. McDonald, who was elected in 1918 but did not stand at the last election, has taken a keen interest in the various philanthropic and social efforts of the borough. He has served on the Cheshire County Council and is on the Commission of Peace for the county.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY, Burlington House, Piccadilly, W.
THURSDAY, June 28th: at 4.30 P.M.
Paper to be read:—Prof. V. H. Blackman, A. T. Legg, and F. G. Gregory: The Effect of a Direct Electric Current of very Low Intensity on the Rate of Growth of the Coleoptile of Barley.
Papers to be read in title only:—Miss R. M. Tupper-Carey and Prof. J. H. Priestley: The Composition of the Cell Wall at the Apical Meristem of Stem and Root. (Communicated by Dr. F. F. Blackman.) L. J. Harris: The Titration of Amino- and Carboxyl-groups in Amino-acids, Polypeptides, &c. (Communicated by Prof. F. G. Hopkins.) Dr. M. S. Pembrey, N. W. MacKeith, W. R. Spurrell, E. C. Warner, and H. J. Westlake: Observations on the Adjustment of the Human Body to Muscular Work. F. A. E. Crew: Studies in Intersexuality. II. Sex-reversal in the Fowl. (Communicated by Prof. R. C. Punnett.) Prof. W. Finkler: Analytical Studies on the Factors causing the Sexual Display in the Mountain Newt (*Triton alpestres*). (Communicated by Prof. E. W. MacBride.) G. A. Schott: On the Scattering of X and γ Rays by Rings of Electrons: the Effect of Damping of the Incident Radiation. Major P. A. MacMahon: On a Class of Transcendents of which the Bessel Functions are a Particular Case. L. C. Martin: The Photometric Matching Field. (Communicated by Prof. H. L. Callendar.) G. P. Thomson: Test of a Theory of Radiation. (Communicated by Sir Joseph Thomson). A. Ll. Hughes, and P. Lowe: Intensities in the Helium Spectrum. (Communicated by Prof. H. A. Wilson.) A. A. Dee: The Effect of Quenching from above the Carbide Transition Temperature upon the Magnetism of Steel. (Communicated by Prof. S. W. J. Smith.) T. S. P. Strangeways and H. E. H. Oakley: The Immediate Changes observed in Tissue Cells after Exposure to Soft X Rays while Growing "in Vitro." (Communicated by W. B. Hardy.)

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.
MEETING OF SECTIONS.

Monday, June 25th.

ODONTOLOGY: at 8 P.M.
Casual Communications:
Mr. L. E. Claremont: Case of Fibro-cystic Disease of the Lower Jaw.
Prof. Hopewell-Smith: Two Odontomes.
Paper:
Prof. Hopewell-Smith: Some Observations on the Histology and Pathology of the Dental Pulp.

Wednesday, June 27th.

SURGERY: at 5.30 P.M.
Discussion:
To be opened by Dr. William J. Mayo (Rochester, U.S.A.) on the Surgery of the Hepatic and Common Bile-ducts. Sir Berkeley Moynihan, Mr. James Sherren, Mr. G. Grey Turner, and Mr. A. J. Walton will also speak.

Thursday, June 28th.

UROLOGY: at 8.30 P.M.
Paper:
Prof. C. G. Cumston (Geneva): The Diagnostic Value of Albuminuria in Chronic Nephritis.
Exhibition of Clinical and Pathological Specimens:
Mr. Kidd will show Candle removed from the Bladder of a Young Male Adult.
Members wishing to show cases or specimens are requested to notify the hon. secretaries.

Friday and Saturday, June 29th and 30th.

OTOLOGY.
Summer Meeting at Cambridge, at Gonville and Caius College (by kind permission of the Master and Fellows). The meeting will be of a physiological character and will be devoted to the Labyrinth. Dr. de Kleijn (Utrecht) will describe some of the work associated with his name and that of Prof. Magnus. Other papers will be read and demonstrations given.
(For details see special circular.)

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE POST-GRADUATE LECTURES, 1, Wimpole-street, W.
FRIDAY, June 29th.—5.30 P.M., Sir Henry Gauvain: Heliotherapy with Special Relation to its Use in Surgical Tuberculosis.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.
MONDAY, June 25th.—10 A.M., Mr. Maingot: Surgical Pathology. 12 noon, Mr. Simmonds: Applied Anatomy. 3 P.M., Dr. Simson: Diseases of Women.
TUESDAY.—10 A.M., Mr. Steadman: Dental Dept. 10.30 A.M., Dr. Paterson: Medical Wards. 2.30 P.M., Dr. Pritchard: Medical Wards.
WEDNESDAY.—10 A.M., Dr. Saunders: Medical Diseases of Children. 11 A.M., Mr. Simson: Gynæcological Demonstration. 12.15 P.M., Dr. Burnford: Medical Pathology. 3 P.M., Dr. Pernet: Skin Dept.

THURSDAY.—10 A.M., Dr. Grainger Stewart: Neurological Dept. 12 noon, Mr. Simmonds: Demonstration of Fractures. 2 P.M., Mr. MacDonald: Genito-Urinary Dept.
FRIDAY.—10 A.M., Mr. Dudley Buxton: Dental Dept. 11 A.M., Dr. McDougal: Electrical Dept. 2 P.M., Mr. Banks-Davis: Throat, Nose, and Ear Dept.
SATURDAY.—9.30 A.M., Dr. Burnford: Bacterial Therapy. 10 A.M., Dr. Saunders: Medical Diseases of Children. 10 A.M., Mr. Banks-Davis: Operations on Throat, Nose, and Ear.
Daily, 10 A.M. to 6 P.M., Saturdays, 10 A.M. to 1 P.M., In-patients, Out-patients, Operations, Special Departments.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James' Hospital, Ouseley-road, Balham, S.W.
THURSDAY, June 28th.—4.30 P.M., Mr. H. D. Gillies: Some Applications of Plastic Surgery in Civil Life.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham.
Demonstration of Clinical Cases at 3.30 P.M.
MONDAY, June 25th.—Medical: Dr. J. Browning Alexander.
TUESDAY.—Surgical (3 P.M.): Mr. Howell Evans.
WEDNESDAY.—Eye Cases: Mr. Norman B. B. Fleming.
THURSDAY.—Surgical: Mr. H. W. Carson.
FRIDAY.—Diseases of Children: Dr. C. E. Sundell.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C. 1.
POST-GRADUATE COURSE: MAY–JUNE, 1923.
CLINICAL LECTURES AND DEMONSTRATIONS.
MONDAY, June 25th.—2 P.M., Out-patient Clinic: Dr. Hinds Howell. 3.30 P.M., X Ray Demonstration: Dr. Russell Reynolds.
TUESDAY, June 26th.—2 P.M., Out-patient Clinic: Dr. Grainger Stewart. 3.30 P.M., Tumours Causing Compression Paraplegia: Mr. Armour.
THURSDAY, June 28th.—2 P.M., Out-patient Clinic: Dr. Kinnier Wilson. 3.30 P.M., Syringomyelia: Dr. Grainger Stewart.
FRIDAY, June 29th.—2 P.M., Out-patient Clinic: Dr. Gordon Holmes. 3.30 P.M., Demonstration of Fraenkel's Exercises in Exercise Room.
COURSE OF LECTURES ON NEURO-PATHOLOGY.
MONDAY, June 25th.—12 noon, Syphilis of the Nervous System: Dr. J. Godwin Greenfield.
A COURSE of 12 LECTURES on the ANATOMY AND PHYSIOLOGY OF THE NERVOUS SYSTEM will be given at 12 noon on TUESDAYS and FRIDAYS if there are sufficient entries for it.
Mr. Armour and Mr. Sargent operate at the Hospital on Tuesday and Friday mornings at 9 A.M., or at such other times as may be announced.
Fees should be paid to the Secretary of the Hospital at the office on entering for the Course.
C. M. HINDS HOWELL, Dean of Medical School.

LONDON HOSPITAL MEDICAL COLLEGE, Mile End, E.
WEDNESDAY, June 27th.—4.15 P.M., Dr. W. M. Feldman: The Physiology of the Infant.
THURSDAY.—4.15 P.M., Mr. G. E. Vilvandré: The Stomach from the Radiologist's Standpoint.
FRIDAY.—4.15 P.M., Mr. G. E. Neligan: Hydronephrosis and Diverticula of the Bladder.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.
THURSDAY, June 28th.—4 P.M., Dr. Cockayne: Tuberculous Mediastinal Glands.

INFANTS HOSPITAL, Vincent-square, S.W. 1.
TUESDAY, June 26th.—8.45 P.M., Mr. H. Tyrrell Gray: Pyloric Stenosis.
THURSDAY.—8.45 P.M., Dr. D. Paterson: The Treatment of Disorders of Digestion in Infants.

QUEEN CHARLOTTE'S LYING-IN HOSPITAL, Marylebone-road, N.W.
THURSDAY, June 28th.—5 P.M., Mr. A. W. Bourne: Anæsthetics in Labour.

UNIVERSITY OF BRISTOL POST-GRADUATE DEMONSTRATIONS.
MONDAY, June 25th.—At Hereford, Prof. Edgeworth: Inter-relations of Internal Secretion Glands.

Appointments.

CALLANDER, L. D., M.D. Edin., has been appointed Visiting Surgeon, Poor-law Infirmary, Doncaster.
FORREST, A. W., M.D., Ch.B. Edin., D.P.H., Medical Officer of Health for Wandsworth.
GASPEY, E. T. D., M.D. Brux., M.R.C.S., L.R.C.P., Assistant Tuberculosis Officer and Resident Medical Officer, the Sanatorium, South Shields.
SMITH, G. F. R., M.B., B.S. Lond., M.D. Liverp., Lecturer on Dental Anæsthetics in the University of Liverpool.
YATES, IRENE, M.D. Lond., M.R.C.P. Lond., Assistant Physician, Elizabeth Garrett Anderson Hospital.
Chelsea Hospital for Women: GALLETLY, A., M.B., Ch.B., M.C., Registrar; JONES, A. D., M.R.C.S., L.R.C.P., House Surgeon.
Surgeons under the Factory and Workshop Acts: HALSTEAD, W. W., M.R.C.S., L.R.C.P. Lond. (Totton); OWEN, R., M.D., C.M. Edin. (Bangor); and INGLIS, T., F.R.C.P. Edin. (Ryde).

Vacancies.

For further information refer to the advertisement columns.
Barbados General Hospital.—Jun. Res. S. £250.
Birmingham and Midland Hospital for Skin and Urinary Diseases, John Bright-street, Birmingham.—Asst. Radiologist.
Brighouse Borough, &c.—M.O. and School M.O., &c. £750.
Chesterfield and North Derbyshire Royal Hospital.—Cas. O. and Orthopædic H.S. £170.
City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E.—Res. M.O. £250.
Durham County Council Maternity and Child Welfare.—Asst. Welfare M.O. £600.
East African Medical Service.—M.O. £600.
East London Hospital for Children and Dispensary for Women, Shadwell, E.—Afternoon Cas. O. £120. Part-time Path. £400.
Elizabeth Garrett Anderson Hospital, 144, Euston-road.—Jun. Asst. Pathologist. £100.
Godalming, Surrey, King George V. Sanatorium.—Jun. Asst. M.O. £422.
Grosvenor Hospital for Women, Vincent-square, S.W.—Hon. Reg.
King's College Hospital Medical School, Denmark Hill, S.E.—Director of Dental Studies. £400.
Lancashire County Mental Hospital, Winwick, Warrington.—Locum Tenens. 7 guineas weekly.
Leamington Spa, Warneford, Leamington, and South Warwickshire General Hospital.—Res. H.P. £150.
Leicester City Mental Hospital, Humberstone.—Third Asst. M.O. and Clin. Path. £350.
Leicester Royal Infirmary.—H.S. £150.
Liverpool Royal Children's Hospital.—Res. M.O. £150.
Macclesfield General Infirmary.—Second H.S. £150.
Manchester Northern Hospital for Women and Children.—H.S. £200.
Margate, Royal Sea Bathing Hospital.—Res. S. £200.
Newcastle-upon-Tyne, Royal Victoria Infirmary.—Hon. Asst. in Electric Dept.
North Riding of Yorkshire County Council Education Committee.—Asst. Sch. M.O. £500.
Nottingham County Sanatorium.—Asst. Res. M.O. £375.
Plymouth, South Devon and East Cornwall Hospital.—H.P. £100.
Poplar Borough.—Dist. M.O. for Old Ford Med. Dist. £200.
Portsmouth Workhouse Infirmary, &c.—Med. Supt. £850. Also First Asst. M.O. and Second Asst. M.O. £350 and £300 respectively.
Queen Charlotte's Lying-in Hospital, Marylebone-road, N.W.—Two Asst. Res. M.O.'s. £80.
Queen Mary's Hospital for the East End, E.—Cas. O. £150. Also Hon. M.O. for Radio-Electro-Therapeutic Dept.
Royal Naval Medical Service.—Surgeon-Lieutenants.
Sedbergh School, Yorkshire.—M.O.
Sheffield City Education Committee.—Asst. School M.O. £500.
Shrewsbury, Royal Salop Infirmary.—H.P. £160.
Southampton County Borough.—Asst. M.O.H. £500.
South London Hospital for Women, Clapham Common, S.W.—Clin. Asst. £1 1s. per attendance.
South Shields, Ingham Infirmary.—Jun. H.S. £150.
Sunderland, Children's Hospital.—Jun. Res. M.O. £100.
Sunderland Royal Infirmary.—H.S. £160.
University College Hospital, Gower-street, W.C.—Asst. for Ear, Nose, and Throat Dept.
Weaverham, Cheshire, Hefferston Sanatorium.—Res. M.O. £600.
West African Medical Service.—M.O. £660.
Wolverhampton and Staffordshire General Hospital.—Res. Surg. O. £250.
The Chief Inspector of Factories, Home Office, London, S.W., announces the following vacant appointments: Chirnside, Berwickshire; Stourbridge, Worcestershire; Bridgend, Glamorganshire.

Births, Marriages, and Deaths.

BIRTHS.

BADENOCH.—On June 14th, at Grange Park-road, Leyton, the wife of Dr. William M. Badenoch, of a daughter.
POWER.—On June 12th, at a nursing home, Worcester, the wife of Squadron Leader D'Arcy Power, *M.C.*, R.A.F. Medical Service, of a son.
PRINGLE.—On June 11th, at Withington-road, Manchester, the wife of Dr. Pringle, of a son.
ROLLESTON.—On June 13th, at Upper Richmond-road, S.W., the wife of Dr. J. D. Rolleston, of a daughter.

MARRIAGES.

ROBERTS—JAMESON.—On June 9th, at St. Saviour's Ballater, Dr. Douglas Roberts to Rosabel Seymour, daughter of the late Dr. A. Seymour Jameson, and of Mrs. Jameson, of Aberdeen.

DEATHS.

FOX.—On June 13th, suddenly, from heart failure, Hugh Clayton Fox, F.R.C.S.I., M.R.C.S., of New Cavendish-street.
MCDONNELL.—On June 14th, Dr. Alexander McDonnell, 39, Stamford-hill, N. 16, passed peacefully to rest, in a nursing home, after operation.
THOMAS.—On June 13th, at Lydney, Gloucestershire, Cyril Nelson Thomas, B.A., M.B., B.Ch., aged 57.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

PUERPERAL INSANITY.*

BY SIR ROBERT ARMSTRONG-JONES, M.D. LOND., D.SC., F.R.C.P.,

LORD CHANCELLOR'S VISITOR IN LUNACY; FORMERLY LECTURER ON MENTAL DISEASES, ST. BARTHOLOMEW'S HOSPITAL, AND EXAMINER IN THE UNIVERSITY OF LONDON.

THE classification of puerperal insanity into that of (*a*) pregnancy, (*b*) puerperal, and (*c*) lactation has the merit of convenience; cases occur in the rough proportion of two, four, and three respectively. My own figures gave as the frequency of insanity with childbirth the approximate ratio (for London) of one case in every 1100 births, although some authorities have quoted a much higher ratio, varying from 1 in 400 to 1 in 700 births. Even if I take my own figures of only one case in 1100 births, the fact that an average of about 880,000 infants are born every year in England and Wales shows that about 800 mothers become victims to insanity each year at this period, which is a high toll taken of pregnant women.

Mental Changes, Normal and Abnormal.

Those who have studied the mental changes which occur under normal circumstances during a natural pregnancy must realise that in persons of a highly susceptible disposition—viz., those that are of the quick, nervous, and sanguine temperament, these changes are apt to be very decided and to become exaggerated. The ordinary digestive troubles, the various forms of neuralgia, the occasional insomnia, the feeling of weight and dizziness are apt to develop into more than the ordinary irritability and restlessness. They sometimes proceed to fractiousness, excitement, or extreme despondency, ending in a complete mental breakdown; the normal affections may turn into suspicion and hatred, the reproductive functions experience a reversal, and the ordinary maternal instincts become so perverted that they are a real and a grave danger to both mother and child.

It is an elementary experience in psychology that the feelings and the emotions govern our daily lives. They are the elementary excitations to voluntary action. They so completely dominate our normal conduct that when disturbed they become potent factors in the causation of insanity. During normal pregnancy the emotions are apt to be somewhat intensified, but under abnormal conditions they may become so exaggerated that insanity results, and of the so-called "ætiological factors," that described as "continuous mental stress," is ascertained to be one of its chief causes. Therefore in first pregnancies, and especially in the case of illegitimate births, we should expect to find insanity to be not infrequent. The moral factors of shame, disgrace, and the resentment that one has been greatly wronged are forms of mental stress experienced in illegitimacy; 12 per cent. of my cases were single women and in the single women the majority of the cases of insanity occurred during their pregnancy, fewer after childbirth, and fewest during lactation, the comparatively slighter incidence during lactation being doubtless due to the fact that few of the single women were allowed to nurse their own infants.

In the general population, the ratio of illegitimate births to legitimate is only 4 to 6 per cent., so it is very evident that illegitimacy, and the emotional stress associated with such a pregnancy, tend to supply one of the chief factors—viz., worry, in the determination of insanity among single women. Of first pregnancies, 78 per cent. were in single women and only 25 per cent. in married women, the fear of the ordeal is thus a totally different affair mentally to the single as compared to the married. In a third of all first pregnancies the symptoms of insanity appeared within six weeks after the confinement. The age of greatest incidence for mental breakdown in my cases was between 25 and 30. I may add, in passing, that one of my patients had suffered from an attack of insanity at the birth of each of 12 children, and in another after each of nine confinements; both cases became subject to incurable insanity at the climacteric.

Onset and Characteristics.

The symptoms of insanity in puerperal cases almost invariably begin with loss of sleep and, as in all other forms of mental disturbance, this is the most frequent and distressing of all the symptoms. It is a bad omen that must be combated at all cost. Following loss of sleep is a delirium which comes and goes, the patient gets confused on occasions, she seems to get "brain-weary," the stimulus of a voluntary effort is maintained only for a brief interval, coherence can only be sustained for a very short period, then she begins to ramble, and be discursive, to be anxious about trifles, and to show restlessness. There is, with this stage, a dry and coated tongue, the lips and teeth have sordes, the urine is scanty and concentrated, and the bowels are constipated, showing there is defective elimination and that some toxin is infecting the patient. There is often a raised temperature and an offensive discharge pointing to the retention of some clot or membrane either in the uterus, the cervix, or the vagina; in some cases, also, toxic products are found in the urine, for I have known albumin to occur when not expected.

The insanity associated with the puerperal period appears to be often of a special kind, so much so that a "nosological entity" may be recognised. When a case of confinement begins with sleeplessness, and this is followed by a feverish and anxious restlessness, a busy and silly concern about trivial details; when there is a too ready response to outward impressions and there is a pointless, baseless chatter, there is a great danger of puerperal delirium, which may soon pass into mania, with delusions of a hallucinatory character, primarily visual, then auditory and not infrequently olfactory. In this mania there is often a marked religious exaltation, associated with erotic tendencies, prurient talk, shouting and singing. Improper suggestions are made, and these unpleasant features appear in women of unblemished character. There is often a suspicion of the husband and a distrust of those who are dearest. These symptoms of gibberish nonsense and immodest chatter are, I think, peculiar to puerperal insanity. They are as characteristic of it as depression and reserve are of the lactational form.

One of the great dangers in puerperal mania is the impulsive and unexpected conduct of the sufferer, resulting sometimes in tragic catastrophe to herself or in some serious harm to the infant. Such patients often take a violent dislike to the husband which is also extended to the offspring. Such "suicidal" tendencies affected nearly one-half of the cases that were under my care, chiefly in the insanity occurring during pregnancy, whereas the antipathy to the child occurred during late lactation.

Special Precautions in Nursing.

It will be the first aim of the nurse to avoid the stigma of certification; she will try her best to keep the patient in her own home and not have her certified.

There is a Bill now before Parliament to postpone certification and make it legal for a patient suffering from a definite attack of insanity to be cared for in an institution without certification. If a mother is certified as insane after the birth of her baby, even when she has got well and has resumed her place in the family life, she will be reminded at each successive pregnancy that she was insane with a former baby, and this worry will help—if anything can—to precipitate another mental breakdown. The certificate of insanity will also inevitably affect the future of her children and will cause a prejudice against them. Moreover, the stigma will excite a fear that her children may at some future date also require certification. A person who has been once certified and has recovered may feel that if a little more patience had been exercised by the doctor and the nurses, she might have been spared the loss of her freedom and all that this entails. It is wise, therefore, to do everything one can to carry out home treatment, but violence or excitement may make this very difficult. Violence must never be met with restraint on the part of the nurse; the patient should not be thwarted or held down, and no restraint of any kind should be practised in a private house. It is possible to do without it. At Claybury for a period of over ten years, with experience of more than 10,000 cases, some of the most acute types, restraint was never once used to control a violent patient. It is almost unbelievable that if a patient is allowed to move about and gesticulate and demonstrate without restraint or obstruction she (or he) will invariably soon settle down quietly. When patients are turned out into the gardens and grounds after a few somersaults and songs, the sensorimotor disturbances cease, and the realisation by the patient that she is no longer in the "lime-light" will bring about the cessation of all former excitement. It is therefore essential that toleration and perseverance should be regarded as essential qualities for the nurse in the successful treatment of this phase of purposeless excitement.

The risk of suicide must, however, always be borne in mind; the fire must be guarded; all medicines, lotions, and drugs must be kept from the patient's reach and sight; all sharp instruments such as knives, scissors, and razors must be removed; the key must be taken from the lock in the door to prevent her locking herself in; the windows must be blocked to prevent their being thrown open and so to suggest a precipitation; the patient's room should, if possible, be on the ground floor. It should be as free from useless furniture as can be managed, there should be no

* Abstracted from a lecture entitled the Nature of Puerperal Insanity and a Few Remarks on How to Nurse a Case, delivered before the Association of Inspectors of Midwives on May 8th.

pictures, the wallpaper must not be too glaring in colour or pronounced in pattern, and the room should be large and airy. Impulsive behaviour towards the infant is a form of excitement very prevalent with puerperal cases, and the child must be kept apart. These are the special considerations of the environment, but it is imperative that the same precautions should be observed out-of-doors also, as the patient should be out as much as possible, and similar precautions hold good. Watchfulness on the part of the nurse is the secret of safety, but the nurse's attention must not be too direct or obtrusive, and at least one nurse by day and one by night (with the necessary relief) must be provided for all cases. Of all illnesses a mental one is the most expensive; but in acute insanity, in the early stages, it pays to spend freely upon the patient's welfare and treatment.

As to the patient herself special attention has to be given to the condition of the breasts, which may need strapping and support, and in particular to cleanliness, and to the aseptic treatment of discharges. A hot douche of plain boiled water cooled to 110° or a mild antiseptic added to it will sometimes bring down the temperature almost at once. The cleanliness of the patient must always be the nurse's first consideration and a hot bath may be the only method of securing this, as she may resent other interference. Special attention must be given to the state of the bladder, as in delirious conditions there may be a distension and even an overflow. The urine must also be examined microscopically, as well as bacteriologically, by the doctor, and the nurse must place specimens before him either naturally passed or withdrawn by catheter. I have known unsuspected albumin to be present, as also pus, and the *Bacillus coli*, and these associated with very great discomfort and restlessness. Constipation is the bane of cases of delirium and this must be avoided by the use of calomel, as it will probably be impossible to use the enema syringe. Sleep is the chief aim of the nurse in mental cases, and for this the "long immersion" bath will prove most helpful, and it will also assist in cleansing any foul discharges. Sleep can often be helped by the administration of a small quantity of alcohol with liquid nourishment, such as a little brandy or dry sherry, or even a tumblerful of stout with a teaspoonful of malt extract in it. I have seen mild suggestion and stroking the hand or forehead soothe to sleep some very restless cases. Of all the difficulties in nursing puerperal cases, feeding is one of the most imperative to carry out properly. Liquid food must be administered during every quiet interval, and enforced alimentation or compulsory super-alimentation must be had resort to, though the nurse must not use any form of mechanical feeding, this being left to the doctor; uniform kindness and a firm determination will often overcome the patient's resistance to taking food. In these states of toxæmia, unless feeding is efficiently carried out, the patient may die before restoration can be effected.

Conclusion.

An old physician has wisely said that no medicinal agents can directly relieve a disordered mind. This can only be effected by controlling the disordered body with which the disordered mind is associated, and great experience and much investigation are necessary to ascertain this disorder and to discriminate it from other disorders of the body. The morbid and effete material which has been taken up into the circulation during the period of early uterine involution must be eliminated through the venous, the lymphatic, and the excretory organs of which the skin, the lungs, the kidneys, and the bowels are the chief. If this kind of nursing care can be secured and maintained for a few weeks, it will probably be rewarded by a complete convalescence, and the tact, the watchfulness, the patience, and sympathy of the nurse will result in at least 70 per cent. of these cases getting well before the expiration of three months. There is no form of insanity that so well repays the nurse for her extreme self-denial, devotion, and skill as that associated with the puerperal state, nor is any form more rapidly fatal if not properly treated.

HEALTH CONDITIONS IN TRINIDAD.[1]

THE population of Trinidad, together with that of the neighbouring island of Tobago, as taken at the census in April, 1921, was 365,913, and was estimated to be 366,760 at the middle of that year. The birth-rate was 31·7 (as stated on p. 3 of the report, not 31·1, as stated on p. 4), and the death-rate is returned as 24·05 per 1000, as compared with 22·15 for the quinquennium, 1916–20; but the ratio for 1921 is acknowledged to be not correct (owing to difference between the estimated population for 1920 and the census population of 1921), and the actual number of deaths (8824) was 502 less than in 1920.[2] The infantile mortality ratio (139 per 1000 births), though showing an improvement on that of the previous year (174), and of the quinquennium, 1915–19 (147), is still high; in the town of San Fernando it was 243 per 1000, in Port of Spain 174, in the rural districts as a whole 129. Enteric fever showed a great improvement; the cases numbered 820 and the deaths 240, compared with 1198 and 295 in 1920; 521 of the cases and 161 of the deaths occurred in the three districts of Port of Spain, Tacarigua, and St. Joseph. Dr. J. R. Dickson, medical inspector of health, who forwards this report, considered that contact, direct or indirect, was the chief mode of spread; inoculation of contacts and education in personal cleanliness were the measures of control chiefly carried out (and presumably local sanitary, or insanitary, conditions dealt with as required).

Pulmonary tuberculosis was notified in 442 cases, and caused 473 deaths (1·28 per 1000) during the year; in 1920 there had been 552 notifications of this disease. "The preponderance of pulmonary cases emphasises the fact that infection is very largely due to personal contact and environment, and indicates that preventive measures should be largely educational, in the direction of early detection of cases, personal cleanliness, improvement of dwellings, and generally of home conditions." Of the 442 cases notified in 1921, 206 dwelt in Port of Spain; and of the 473 deaths, 203 occurred in the same urban district. Pneumonia accounted for 470 deaths during the year (p. 7), giving a ratio of 1·29 per 1000 (not 1·0 per 1000 as stated on p. 3); of the 470 deaths, 174 occurred in the two urban districts of San Fernando and Port of Spain. Anti-malarial measures are being carried out in various parts of the island; venereal clinics have been established in Port of Spain and San Fernando; and the intensive curative and educational campaign against ankylostomiasis of the Rockefeller International Board is being continued.

ST. CHAD'S HOSPITAL FOR PAYING PATIENTS, BIRMINGHAM.

THE report of the hospital committee for the year ending March 31st, 1923, records a fall in the number of admissions (752 against 833 in 1921–22), due to the general industrial depression prevailing throughout the year. "Even the low inclusive fees charged have been beyond the means of many who in more prosperous times would gladly have availed themselves of the advantages" offered by the hospital. The area from which patients were received is wide, ranging from Redcar and Whitehaven to Weymouth: almost all patients paid an inclusive fee for accommodation and treatment, which was about 50 per cent. lower than the cost of similar private treatment elsewhere. There are now 32 specialists on the staff of the hospital; the opportunities for training of nurses are exceptionally good, the practical knowledge obtained in the wards being supplemented by systematic lectures by a sister tutor and by the resident medical officer and members of the medical staff. Great interest in the hospital has been manifested by other centres, and information has been sought not only by authorities from London, Glasgow, and other cities, but by the Director-General of Health, Wellington, New Zealand. The committee have endeavoured to make St. Chad's fulfil as completely as possible the conditions laid down by the Advisory Committee to the Minister of Health as desirable in a hospital for paying patients; it has now been made possible for patients to make direct applications to this hospital for admission and treatment. Application must be made to the house governor, who is empowered to assess the amount of fees payable according to the nature of the treatment required and the financial circumstances of the patient. "In the interest of the patient it is strongly recommended that a letter of introduction from his or her doctor should be presented at the time of application, or the name of the doctor given."

AN IMPROVED FIRELIGHTER.

WE have received from "Certo" Limited, 42, High-street, Hampton Wick, Middlesex, specimens of a patent firelighter which consists of slips of an inflammable material 5 in. by 1 in. pivoted together at the centre so that the slips can be spread out in the shape of a star which is then placed in the grate between layers of coal. No paper or wood is required, and, if the fire is carefully laid, the result is good. When the firelighter is in its closed condition a hundred of them only occupy a space of 10 in. by 6 in. by 6 in., so that the arrangement is economical of storage room. The price is 6*d.* a packet of ten firelighters.

Messrs. Burroughs Wellcome and Co. have acquired a site at 9/11, East Forty-first-street, New York, almost opposite their old offices, and have erected upon it a 12-storey building in the Gothic style. The lower part of this building is now occupied by the firm as its general offices for the U.S.A., the ground floor being utilised for the display of fine chemicals and medical equipments.

[1] Report for 1921 of Medical Inspector of Health, Trinidad. Govt. Printing Office, Port of Spain. 1922.

[2] (Page 4.) On page 9 the difference appears as 414.